August 6, 1962

NOTES 8-6-62 GORMAN

B 8-6

1. S-I Contract - The fee on the Chrysler S-I contract was settled at 6.3 per cent.

2. West Coast Jet Service - The Civil Aeronautics Board announced Thursday that it has denied Delta Airlines' petition for temporary exemption authority to serve Huntsville, Alabama with West Coast Jet service.

3. Transportation Plan - Mr. Webb verbally approved our plans for a single Marine contractor to transport large vehicle stages. He asked us to check this plan out with the Navy before implementing. He also approved the idea of buying the new "Grand Haven." Both of these actions are subject to the availability of FY 63 funds. We are proceeding on both actions up to but not including the point of award.

NOTES 8/6/62 CONSTAN

Be-6

1. UNLOADING OF PRODUCTION EQUIPMENT

The solicitor of labor ruled that the unloading of production type equipment is traditionally Building Trades Union type work. As a result of this decision Chrysler, Boeing and Mason-Rust have been formally advised that the Mason-Rust Company at Michoud will accomplish all the unloading of production type equipment. ✓

2. CONSTRUCTION MANAGER

It has been determined that Michoud Operations should contract for a construction manager to accomplish the construction of facilities at Michoud Operations. It has been determined that this construction manager should be sole sourced to the Mason-Rust Company. Procurement and Contracts has forwarded a procurement plan to NASA Headquarters for approval. Negotiations are expected to begin this week. ✓

V

G.C.

Lossy calmed down again?

B

NOTES 8/6/62 DEBUS 38-6

No NOTES received this date from Dr. Debus.

NOTES 7-30-62 DEBUS B8-6

1. Handling Equipment Design Responsibility: Discussion with Mr. Weidner disclosed P&VE does not want this responsibility and an agreement was made with Mr. Owens in Mr. Poppel's office for Mr. Vowe to continue this function as in the past. ✓

2. Hydrogen Gas Experiment: Preliminary design plans are being worked out with P&VE Division on a 3000 P.S.I. gaseous hydrogen bottle to be installed in SA-4 for boundary layer effects on gas being vented in flight. ✓

3. Propellant Coupler Deficiency: Propellant loading tests, of swing arm 2 for the S-IV stage, conducted at Test Division during the week of July 16, 1962 indicated a deficiency in the propellant (LOX and LH_2) couplers; excessive leakage occurred in "chill down." The couplers were designed by Douglas Aircraft Company. This problem will be investigated, about the latter part of this week, for remedial action by the contractor's representatives and personnel from this office. ✓

4. Copy of Notes to Holmes attached. ✓

These NOTES received too late for those of 7/30 AM.

NOTES 7-30-62 DEBUS B6-8

1. Presentation to House of Representatives Science & Astronautics Committee: Maj. Petrone presented a complete briefing on both technical and financial details on Saturn Complex 39 to the House Science & Astronautics Committee on 25 July. The primary purpose of this committee was to investigate areas of the potential savings of the space program and to have these entered into the record. NASA and DOD were both requested to testify at these hearings. ✓

2. NASA Audit Office to be established at LOC: Mr. Roger Taillon will be Acting Audit Manager assisted by Mr. Howard Mitchell, effective August 1, 1962. Primary purpose of the Audit Office will be to audit NASA LOC contracts. ✓

3. Blockhouse 37: Layout, rack and console assignments have changed because of the MSC, POD space requests. They have now increased their needs to include approximately 1/3 to 1/2 of the overall available firing room space. A new layout is being prepared which eliminates duplication of equipments of each pad for the Launch Vehicle stations. Overall blockhouse layout is being handled by the Electrical Sub-Panel of the Apollo Launch Working Group, co-chaired by Rigell of LVOD and J. Williams of POD. ✓

4. Mariner R-1: Certain indications relayed to me were to the effect that some personnel of NASA Headquarters were critical of the AMR Flight Safety Officer's action taken on MR-1. I investigated the charts and circumstances related to his decision. His action was fully justified and I so notified General Davis of my findings. Recent calculations have indicated that the MR-1 would have impacted prior to second Agena ignition had this action not been taken. (No action required - info only.) ✓

5. Lockheed Jet Star: I plan to discuss in detail some of the pros and cons concerning the availability of a Jet Star for use between Marshall, Headquarters and LOC. Many distinct advantages are apparent for key personnel in these Centers to have time available to investigate problem areas of mutual interest. Thus permitting more detailed analysis for decision making processes involving multi-million dollar commitments. ✓

6. Operational Flight Control Study: A meeting of the Steering Committee for this study was held 24 July at MSFC. At this meeting RCA demonstrated specific implementation schemes and indicated an expected increase in reliability by OFC application. Some specific information should be available in the form of a final report to be published in September. ✓

7. Spacecraft Checkout Building Location: In a meeting Saturday, 28 July, between LOC Facilities and GSE offices, the Heavy Systems Office, with the MSC Flight Operations Division (Preston), the problem of Spacecraft Checkout Building in the industiral area versus the Vertical Assembly Building area was discussed, and the specific functions of the checkout center for the spacecraft and the spacecraft checkout center at the launch control center was discussed. After careful analysis of all functions, a considerable clarification of the problem areas was obtained. Reports will be made on these understanding and distributed to interested members of the OMSF Management Council. ✓

B 6-8

NOTES - 7/23/62 - DEBUS

1. Aircraft: Mr. Harry Gorman will discuss with Mr. Holmes the possibility of justifying one executive type aircraft in the Jet Star classification to be jointly used by LOC, MSFC and NASA Headquarters.

2. Copy of Notes to Holmes attached.

These NOTES received too late for those of 7/23. JJG.

Kurt:

This may be our error that the 7/23 NOTES didn't go in on 7/30 (They were too late for 7/23); and, if so, I am sorry. It would help, however, if you could get the NOTES in by the deadline of noon Monday, to which we all agreed.

KM 8-6

B6-8

NOTES - 7/23/62 - DEBUS

1. Monthly meetings of a Launch Operations Center Council have been established as one of the methods of jointly developing policy matters which will apply to NASA activities at AMR. Membership composed of the NASA element directors and field managers stationed at AMR.

2. Planned Meeting with MSC/LOC Personnel at Houston: On Thursday of this week I have planned a meeting with representatives from MSC and LOC at Houston to discuss various areas of operation including the integration and checkout procedures for Apollo as well as the LOC operations involved with AMR. Sloan will also attend this meeting.

3. Launch Operations Working Group Meeting: The LOWG meeting was held on July 18-19 with representatives of MSFC, Boeing, North American, and Douglas present and actively participating. Minutes of the meeting will contain the reports of the Panels and are being prepared for early distribution.

4. Occupation of New Leased Space: The second floor of the CAC Building at Cocoa Beach was occupied the past weekend by the P&C and Legal Offices.

5. Evaluation by NASA Headquarters: This office participated with NASA Headquarters team in evaluation of the shop support activities at LOC, providing them with data and itemizing it simultaneously ourselves.

6. MLLP Planning: A Meteorological Task Force (eight members) has been selected by the Joint Instrumentation Planning Group to discuss in detail the meteorological plan for AMR expanded launch area. Co-chairmen are Lt Colonel Romo (AFMTC) and Dr. Bruns. Areas of special concern to LOC at this time appear to be the concentration of weather data handling, display and analysis at Central Control rather than at the Launch Control Center as well as the intention to erect 400 feet towers close (1000 feet) to each MLLP pad.

7. Meteorological Capability for LOC: I have indicated to the local Weather Bureau representative (Ernest Ammon) that I will establish a capability on the LOC Staff for providing meteorological advice for all NASA launchings and coordinate such activities.

8. Deluzio: On 23 July, Mr. Deluzio informed me that he would give me a final answer by the end of this week.

NOTES - GEISSLER - 8-6-62 B 8-6

1. LIAISON WITH LANGLEY: This is to clarify item 2 from notes of 7-30-62 (copy attached). We would propose the assignment of an MSFC resident engineer at Langley to represent Marshall on a center-wide basis. The man's background and experience should be primarily in the area of aeroballistics, inasmuch as the greatest share of MSFC work being done at Langley is in the aerodynamics, fluid mechanics, and structural dynamics fields. A small amount of secretarial and administrative support from Langley would be appreciated. Mr. T. A. Harris of Langley will be at Marshall on 21 and 22 August and would desire to discuss this matter further. Perhaps Dr. McCall should talk with him.

Mac
See Geissler's Notes of 7-30. →
Please settle the issue and keep me posted B

2. APOLLO RE-ENTRY TEST: A study was conducted to investigate from the standpoint of performance and control, the feasibility of using one of the first launches of the C-5 R&D flight vehicles to test the re-entry of the Apollo capsule into the earth's atmosphere under conditions truly representative of lunar return flight. It is desirable to conduct this re-entry test without sacrificing any of the objectives of the R&D flight and at the same time not exceed any of the present design constraints of the R&D vehicle.

Results indicate that these objectives can be achieved.

3. STUDY RESULTS ON C-5 LANDING STAGE AS THIRD STAGE FOR C-1B: The C-1B using a C-5 landing stage as a third stage is not attractive as a logistics vehicle. It is not capable of soft-landing its own structure and guidance equipment on the moon.

NOTES 8-6-62 GORMAN 8-6

1. S-I Contract - The fee on the Chrysler S-I contract was settled at 6.3 per cent. ✓

2. West Coast Jet Service - The Civil Aeronautics Board announced Thursday that it has denied Delta Airlines' petition for temporary exemption authority to serve Huntsville, Alabama with West Coast Jet service. ✓

3. Transportation Plan - Mr. Webb verbally approved our plans for a single Marine contractor to transport large vehicle stages. He asked us to check this plan out with the Navy before implementing. He also approved the idea of buying the new "Grand Haven." Both of these actions are subject to the availability of FY 63 funds. We are proceeding on both actions up to but not including the point of award. ✓

NOTES 8-6-62 GRAU

B 8-6

1. SA-3 FINAL CHECKOUT: The S-I stage completed pressure-functional testing on August 1, 1962 and was released to the Mechanical Branch for weighing and alignment. Late arrival of the ST-124 for the air flow test and the incorporation of one late Engineering Order delayed release of the vehicle for one day. The Engineering Order involved the installation of measurements needed for the Centaur Program.

2. CENTAUR: Engines were removed from vehicle F-2 at Sycamore Canyon last week for replacement of gimble blocks. Replacement blocks were to be made from a new material which was less brittle at cryogenic temperatures. This operation should now be complete since replacement blocks were expected to arrive at GD/A on Friday of last week.

It is understood that run O-A at Sycamore Canyon has been cancelled for vehicle F-2, thus eliminating cold gimballing of Pratt & Whitney engines. This is considered inadvisable, particularly with recently encountered gimballing difficulties.

Action was initiated to increase our government inspection support at Minneapolis-Honeywell in St. Petersburg, Florida. Minneapolis-Honeywell is currently designing and building a major portion of the guidance system for Centaur. A letter requesting this additional support has been prepared and is being submitted to our Procurements and Contracts Office for coordination with Air Force Plant Representative at GD/A. Orlando Air Force Contract Management District is aware of our additional personnel requirements and has obtained personnel spaces to support our activities.

3. QUALITY REQUIREMENTS FOR STANDARD SPACE LAUNCH VEHICLE: A meeting was held with Space Systems Division (Air Force) personnel and Mr. Howard Weiss, Office of Reliability and Quality Assurance, NASA Headquarters, at Aerospace Corporation, Los Angeles, California, to discuss Quality Requirements for the Standard Space Launch Vehicle. Air Force Specification DCAS 62-10 is to be included as a part of the contract. Since this document is not as comprehensive as NPC 200-2, there were certain provisions which were requested by NASA to be included. A list of these provisions is being prepared for distribution.

D.F.
Is that Pentagon-Chinese for Titan III?
B

B 8-6

NOTES - HAEUSSERMANN, 8/6/62

1. STATUS OF IBM FOLLOW-ON CONTRACTS: Proposals were received on 8/2. Costs were higher than estimated ($373,000 vs $265,000 and $887,000 vs $605,000) due to relocation allowances which is an established IBM policy and the initial contingent being in the higher salary bracket. Proposals are being evaluated and contract coverage is hoped for by 9/1. ✓ IBM has moved out with personnel commitments and discussed with Mr. J. Moquin (Brown Engr.) their immediate space requirements. An area of 12,000 sq. ft. in the Research Park area can be made available in two weeks. IBM's 60,000 sq. ft. building (up to 40,000 sq. ft. for MSFC requirements and 20,000 commerical products activity) should be completed one year from now. Personnel presently committed are top engineers and, from our dealings with them during the past two years, they are the type which can be worked with in a harmonious manner. IBM has acted with much enthusiasm both from a management level and the individual engineer's standpoint. Mr. Ralph Mork, who will function as IBM's Saturn program manager in Owego, visited with me on 8/2. He was very pleased with the arrangement in the Research Park area and the fact that the facilities would be closely controlled and that the entire arrangement was being carefully planned. Also IBM encourages their personnel to do part time University instructing. See attached IBM Newsreport. ✓✓

Concerning the contract efforts, two basic questions have been brought up within IBM Headquarters. These are: The question of joint patents between IBM and Marshall engineers and IBM's involvement with the RCA-110. On the latter, IBM wants it understood that they would not in any respect want to be in the position of having to comment on the adequacy, capability, etc., of the RCA-110. As seen by Astrionics Division these two questions should not be any problem whatsoever. ✓

Mr. Fred Foss who will be the manager of the Huntsville group has made all of his personal arrangements and will be officially in Huntsville in about two weeks. ✓

2. STATUS OF STATIC INVERTER: Tests have shown that the new 450 VA static inverter, developed jointly by our Applied Research Branch and Electro-Mechanical Engineering Branch, satisfies the thermal design requirements. ✓

3. STATUS OF FLIGHT SIMULATION FACILITY: Specifications for the equipment of the second installation phase (celestial body motion simulator) in Comp. Division have been prepared for RFQ. ✓

B 8-6

NOTES 8/6/62 Helmburg

*1. S-1-4 ACCEPTANCE FIRING: Preparations for firing are on schedule. First firing planned 8/23/62. ✓ gcm

2. ACCIDENT AT Y-MANIFOLD TEST FACILITY: This is a perfect example of where the responsibility of the individual needs to be stressed more. This man slipped and fell from ladder inside tank. No amount of procedure writing, practice, etc., can be substituted for a sense of keeping oneself in control. We have talked to all stand personnel in this vein and are re-evaluating all procedures, both written and unwritten. Injuries were not serious, according to doctor's report; lacerations, cracked vertebra, and broken breast bone. What would you call serious? gcm ✓!

*3. DAC S-IV BATTLESHIP TEST PROGRAM: MSFC Review Team will return to Sacto when notified of start of testing. Umbilical control cable (192 wires) burned out and must be replaced. Cold flow now tentatively scheduled for 8/13/62. ✓ gcm

4. CENTAUR: Preparations for fatigue testing of propellant tank are on schedule. ✓

The cold flow and static firing of flight stage F-2 has been delayed to permit replacement of the engine gimbal pins. Cold flow now scheduled 8/23/62. ✓

5. MARINE ACTIVITIES: A meeting was held 8/1/62, at NASA Headquarters to present to Mr. Webb our transportation plan, which included the procurement of the SS NEW GRAND HAVEN. We were instructed to proceed with vessel acquisition short of actual committment. We were also asked to check with the U. S. Navy regarding our fleet operations and for engaging a marine transportation contractor. ✓

TVA requests 10 day's notice of SA-3 shipment to lower Pickwick pool to provide necessary vertical clearance for PROMISE, under Florence Bridge. ✓

6. MTF: As you know, this division has initiated a proposed reprogramming of FY 63 C of F funds for MTF as follows:

PROJECT	BUDGET	REQUIRED
Advanced Saturn S-IC Test Facility	$36,000,000	$34,000,000
Advanced Saturn S-II Test Facility	0	$19,[illegible]00,000
NOVA Stage Test Facility	$43,000,000	$ 500,000
Utility Instl. & Sup. Fac.	$13,500,000	$38,400,000
TOTALS	$92,500,000	$92,500,000

It is to be noted that the initial submission of FY 63 budget covering the Utility Installation and Support Facilities ($13,500,000) is entirely inadequate to properly support the C-5 program. This line item includes all shared technical facilities, e.g., Data Acquisition, etc., as well as site utilities and support. Furthermore, no portion of this line item

...H, let's discuss this, the sooner the better!
(see also next page)
B 8-6

was or is intended for support of the NOVA program, but only for support of the S-IC test complex. A recent review of this situation has indicated the need in FY 63 for a minimum of $38,400,000 Utility Installations and Support Facilities funds to adequately support the C-5 program at MTF. While the above review includes the minimum actually required in FY 63 consistent with current schedules, provision has been made for the most efficient and economical expansion of support facilities to encompass the NOVA and C-1 programs at MTF when it is considered feasible to proceed. With the exception of the lock and two or three less important support facilities, additional funds will be required for the expansion of utilities and support facilities to include the NOVA program at MTF.

The MTF Planning Office, together with the AE contractor, is preparing a detailed justification of the funds required for the C-5 support facilities at MTF. You will be furnished these data at the earliest practicable date.

7. CAPE GSE: The leaking propellant connector problem which developed on swing arm No. 2 for the S-IV stage of the SA-5 vehicle has not been solved. DAC is redesigning the ground release housing to eliminate the side loads which caused the leakage. LOC is working on a modification to the propellant connector itself. Modified connectors are scheduled to be received from LOC on 9/3/62 for test.

Two Block I support arms (one hold-down and one retractable arm) were received from LOC for test. This set, when completed, will serve as a spare set for VLF-34.

Tests were satisfactorily completed on the swing arm for SA-3.

8. WEST AREA C-5 TEST STAND: Bids were opened in Mobile covering all work above ground on the West Area Test Stand. Re-programming of funds will be required before a contract may be let. Existing contracts for the new Blockhouse, the Test Stand Foundation, and Instrumentation Systems are on schedule. FY 1963 work yet to be contracted include the Propellant Systems, Additional High Pressure Water Systems, High Pressure Gas Systems, and additional instrumentation. At this time, we are $1,300,000.00 short.

9. DEAD COW PROBLEM: Test Division's conscience is clean on this.

Karl, Please hold to one page.
Suggestion: Omit items 2 and 9; make items 4 and 7 one paragraph each; put item 6 in a special NOTE.
Sprag-L

(In other words, it wasn't the bull's fault? B)

NOTES 8-6-62 HOELZER

B 8-6

* gcm 1. PROJECT OFFICER FOR LOC: LOC has requested Computation Division to furnish a project officer for a contractor study of automation of range facilities. This matter is being discussed further with LOC. ✓

2. EQUIPMENT FOR ANALOG COMPUTER IN 4484: Procurement of additional tape recording equipment for the high-speed analog computer in Building 4484 has been initiated. This equipment will be used to satisfy the new requirement from Aeroballistics Division to excite simulated C-5 control systems with measured winds. ✓

NOTES 8-6-62 HUETER

8-6

1. CENTAUR:

a. F-2: Directions were given GD/A to replace the engine gimbal assemblies with a new design to overcome too high friction. This has been discovered lately and the exchange has to be made in Sycamore test stand. Overtime has been authorized to reduce schedule impact.

b. F-3: Major weld is scheduled for completion by Friday, Aug. 3, at which time the tank will be shipped to the propulsion test assembly dock at Plant 71. The engine gimbal assemblies are scheduled for delivery on Aug. 7 and replacement will be completed prior to engine installation.

c. General: Cursory review of the Centaur Ad Hoc Evaluation inputs indicates some mandatory changes that will affect F-2 vehicle. Schedule impact is not known at this time.

2. AGENA:

a. Mariner 2: J-FACT (Joint Flight Acceptance Composite Test - Atlas, Agena and Spacecraft) was satisfactorily completed on Friday. No details are available at this moment on problems encountered. The Mariner spacecraft was removed from the pad on Saturday. The Agena is scheduled for de-mate on Tuesday. Both will undergo final MAB preparations and be re-mated on August 13 and 15.

b. Agena Management Task Group: This group was formed to study the feasibility and desirability of direct contracts between MSFC and Lockheed on NASA peculiar requirements. Problem areas are: launch services at AMR for Lockheed, General Dynamics, Burroughs, General Electric, Rocketdyne; transportation and procurement of propellants. The group plans to finalize their recommendation by Aug. 14; coordinate within NASA and AFSSD as appropriate between Aug. 21 and Aug. 30, and issue the final recommendation on Aug. 30, 1962.

c. Gemini: A Gemini Target Vehicle status review meeting was held at MSC on Thursday, Aug. 2, to review the Gemini Agena propulsion system, including the main propulsion and the secondary propulsion systems. MSFC recommended to MSC the metal bellows tank instead of a Teflon bladder for the positive expulsion device in the secondary propulsion system. MSC has the recommendation under consideration and will advise MSFC of their decision.

NOTES 8-6-62 Koelle

B 8-6

1. LUNAR LOGISTICS PROJECT

The bidder's conference for both the "bus" study and the payload study will take place in Washington this Wednesday. We are sending Joe de Fries and George Bucher as MSFC representatives. These men will also be on the proposal evaluation team. The bids are due August 20, 1962. ✓

2. ROTHROCK TASK TEAM

Dr. Seamans has appointed a task team under A. Rothrock (Deputy to Mr. Hyatt) to review in the future all advanced vehicle and system studies within NASA. The deadline for submissions is today. We submitted 28 projects which are described on a one page summary sheet. Do you want to have a set of these study project submissions at this time? I am serving on Mr. Rothrock's task team as the MSFC representative. The first two-day review meeting is scheduled for September 10 and 11 in Washington. ✓

HHK Yes, please B

3. NOVA

* 9am Negotiations with GD/A and Martin have been completed and the contracts will be effective 13 August 62. A joint "Orientation Meeting" will be held in the Directors Conference Room at 8:30 on 15 August. You are invited to attend; however, your participation is not considered mandatory. The purpose of the meeting will be to review the overall study requirements and plan with particular emphasis on the first 3-1/2 months effort.

H.H.K.
I would have loved to attend this, but must go to Wash 15 Aug morning. Can it be held on the 14th?? B

NOTES 6-8-62 KUERS B 8-6

W.K.

I asked Mrazek to lay on an internal "Common Bulkhead Conference" for 13 Aug., 3 pm. Please include presentation on this facility. B

1. Facilities: Our Honeycomb Facility Project has been approved by Washington. This is not a new building but will be located in the low bay area of 4707. It consists of a dust-free air conditioned layup room, chemical cleaning tanks, and a curing room with an autoclave having inside dimensions of 96" diameter x 12' long. Cost, exclusive of the autoclave, is $78,800. Operational date is 1 January 1963. Main purpose of this project is to fabricate sample panels for evaluation of different techniques and materials being used in industry and to develop quality control methods. This facility will be very valuable for solving problems in the area of bonded common bulkheads for upper stages.

* 2. Instrument Unit: The first structure of the Instrument Unit (C-1) has been completed and is presently in the assembly shop for installation of wiring and instrumentation. Delivery to Astrionics is scheduled for September 24.

3. F-1 Engines: The F-1 Engine mock-up was received in an unassembled condition. Rocketdyne personnel will assist in the assembly of the mock-up in Building 4705.

4. C-1 Interface Problem: Design criteria for a new master interface jig has been established by the Assembly Working Group. This will be discussed with DAC on Tuesday, August 7.

32-6

Notes 8-6-62, Lange

1. C-1. MSFC proposed launch schedule adjustments have been approved by HQs (Mr. Rosen) 7-26-62. Details will be published separately.

SA-3 Booster will be released after final checkout 8-24-62 and be shipped 9-5-62. TVA stated that river will be kept open till that date.

SA-4 Booster was transferred from M-QUAL to M-TEST on 7-31-62.

SA-5 Booster clustering work continues. Completion of engine installation by 10-12-62 is indicated (3 weeks slippage).

154" Instrument Unit - Structural assembly and inspection completed. Documentation is incomplete; hardware and electronic gear from M-ASTR is not yet available.

SA-D5 - Tail Assembly and Second Stage Adapter are due for delivery during week of 8-13-62, indicating a three weeks slip of booster delivery to M-TEST.

S-IV - Battleship Testing - LOX cold flow is schedule for 8-10-62 and hot firing for 8-17-62 due to difficulties with an electrical connector.

Dynamics Vehicle - Completion of insulation work is expected 8-9-62.

All Systems Vehicle - Stage is in hydrostatic tower. Tests and tank cleaning will be accomplished prior to moving stage to insulation area. Anticipated completion 8-15-62.

2. C-5. S-IC - Boeing's proposed technical work statement for the long term R&D contract is being evaluated.

Facility Contract - A&E services and construction will be added to Contract NAS8-2577; acquisition of industrial equipment will be covered separately.

Construction and installation of Boeing equipment for Data Processing in Huntsville was completed 7-27-62.

S-II - is in final negotiations. Early finalization is expected.

PERT Implementation was discussed on 7-30-62 at MSFC.

Explosive Hazard Problems were presented by M-SAT (Cox) to HQs (Mr. Rosen) who proposed to put Dr. Gayle (P&VE) in charge full time. M-SAT will prepare letter to AF (Mr. Ackermann) stating MSFC's position. NAA will request site approval for all-systems vehicle within 10 days.

S-IVB - Since HQs has not yet approved proposed contract, WOO was authorized to extend study contract with DAC to 8-15-62.

On 7-23-62 in agreement with M-ASTR (Dr. Haeussermann), Mr. Seltter (M-SAT) was appointed Guidance Systems Manager for M-SAT to manage and coordinate activities of C-1, C-1B & C-5 Guidance System Development (including the budgetary control) and to act as focal point for information flow between MSFC and other NASA elements.

Dr. von Braun's Comments to Notes, 7-30-62, Lange

B 8-6

S-IC - Negotiations on Facilities contract to support Boeing Michoud operations were completed for signature on 7-27-62 with an estimated total of approx. $14.8M of which $2.0M will be from C of F funds. Approximately $5.0M are-available for obligation yet.

-- Does this include High Bay area? B. --

← Dr. Lange, Use Thermo of original copy in future.

(Yes, but meanwhile the price of High Bay Area is $2.791M instead of $2.00M) Jan

NOTES, 8-6-62, MAUS

B 8-6

1. PLANNING AND IMPLEMENTATION OF NASA PROJECTS - NASA Headquarters is revising the directive on Planning and Implementation of NASA Projects (GMI 4-1-1). Dr. Seamans furnished a draft revision and asked for written comments from MSFC not later than August 24, 1962. Significant changes are included, such as Project and Systems Managers in headquarters and field centers (previously in field centers only), and the organizational pattern for a given project or system being determined on a case-by-case basis by the responsible program director. We have distributed copies to divisions and project offices for comments. We will consolidate a recommended MSFC reply and present for discussion in the August 17 board meeting. Leave enough time for it. This is important! B

2. SCHEDULING AND FUNDING - The OMSF official call for the FY 63 Financial Operating Plan, the FY 64 Budget, and the Detailed Schedules has been signed by Mr. Holmes. This call will require an initial submission on Sept 4, 1962 on all three packages. We expect to receive OMSF guidelines today, and Al Little of OMSF has informed that he tentatively plans to bring a task group to MSFC next week, to assist us in interpreting OMSF guidelines. ✓

3. MANAGEMENT ANALYSIS POSITION FILLED - Mr. Joseph Reed has been hired to fill the position of head of Management Analysis. He comes highly recommended. He has had a broad experience as: (1) a practicing attorney; (2) a management analyst for the Navy including work for Adm. Rayburn; (3) Vice President and Production Manager of Bogue Electric; (4) president of a private consulting firm owned by him and Adm. Wellings; (5) a management consultant for FAA. He has also been a guest lecturer at major universities. He will report to MSFC August 24, 1962. Unfortunately you were out of town during his visit, however, he has met Messrs Rees, Gorman, Neubert, and Newby. ✓

H.M. Would like to meet him after he gets in B

4. NASA LONG RANGE PLAN - Our input to the NASA Long Range Plan will cover the OVER-ALL NASA program as envisioned by Marshall in order to show project interrelationships. Major emphasis will be placed on activities within the Marshall mission statement. Dr. Stuhlinger, Mr. Koelle, and I have approved an outline for the MSFC input. Individual assignments of responsibility for preparation of inputs were made on Aug 2. The completed package will be presented to the Board for approval at the Aug 31 meeting. I would like to review the draft informally with you during the week prior to the Board meeting. We are required to deliver a package approved by you to Mr. Holmes and Mr. Hyatt by Sept 4 (OMSF has relaxed their original Aug 20 deadline). ✓

O.K. B

NOTES 8-6-62 MRAZEK

B 8-6

1. BOEING PERSONNEL: Onboard as of 8-2-62: 332. ✓

2. BOEING TASK ASSIGNMENTS: Task Assignments for Design and Stress Analysis of the S-IC Fuel Tank Assembly were released to The Boeing Company on 8-2-62 for out-of-house development. These two are the first of 17 Structures Branch task assignments planned to be released to The Boeing Company during the 90-day extension of the contract.

A technique has been developed to better define the acoustic prediction method for static test conditions of large boosters. The method for predicting these effects is to establish from existing data and combined physical theories of acoustics and optics, certain diffraction correlations which will better define the sound field of the existing C-1 vehicle. These methods may, in addition, be directly applicable to C-5 and NOVA class vehicles. ✓

3. TITANIUM - GEMINI: At the request of MSC, representatives of MSC and McDonnell Aircraft were given a concentrated briefing (Tuesday, 7-31-62) on the MSFC studies on the reactivity of titanium with oxygen. It was understood that the Mercury and Gemini capsules are fabricated from a double layer of 0.010 titanium alloy and contain 5 psia O_2 internally. Previous tests by this Branch have shown that if the capsule is punctured (as by a micrometeorite), catastrophic failure is highly probable. The McDonnell representative believed that only a very cursory examination for micrometeorite impacts has been made by his company on the recovered Mercury capsules. (As you requested in last week's note, letter to Mr. Holmes is being prepared.) The presence of the titanium/oxygen combination in the capsule adds to the necessity for thorough inspection of the recovered capsules. ✓

4. BLAST HAZARD: Concern appears to be increasing over the need for realistic LH_2/LOX blast hazard data for use in connection with S-II siting problems. A proposed scope of work, reflecting the joint recommendations of personnel from Ballistics Research Laboratories, LOC, Patrick AFB, Combustion and Explosives Research, and MSFC, has been expected from BRL since June 16. Inasmuch as this proposal is now greatly overdue and the need for action is urgent, preparation of back-up scope of work for possible submission to various contractors has been initiated by Engineering Materials Branch. ✓✓

5. RIFT: The PERT/COST implementation team, as required by the RIFT contract, held its first meeting on 7-31-62. The team was formalized as to membership participation.

A Facilities Engineering Office team conducted a two-day survey of Georgia Nuclear Laboratories' facilities at Dawsonville, Georgia, to determine the condition of the equipment at GNL. The results were favorable.

Financial Management Office representatives have reviewed the costing structure for GNL. The results were favorable. ✓

6. ROVER: Program briefings were exchanged between Aerojet-General Corporation and Lockheed Missiles and Space Company on 8-1/2-62. ✓

NOTES 8-6-62 Rudolph

B 8-6

1. Performance Specification, Saturn C-5/Apollo (LOR Mode):

Reference my Notes of last Monday.

a) In your absence I have discussed a draft of the above spec with Eberhard. ✓

b) We agreed that I forward the draft to Shea to get his reaction. ✓

c) We further agreed that my people continue to work with your people on it, especially with Palaoro. ✓

2. Documentation:

In above discussion, Eberhard and I agreed further, that my office work closely with Palaoro in this area. ✓

B 8-6

NOTES 8-6-62 Stuhlinger

1. MICROMETEROID SATELLITE: Following conversations between Dr. Johnson and me of RPD, and Messrs. Pearson, Keller, Quasa, et al of OART, RPD has initiated studies of micrometeoroid measurement satellites for both near-earth and near-lunar measurements. These satellite flights should offer a sensitive area about one order of magnitude greater than the areas of other meteoroid satellites (e.g., S-55). Conversations between personnel of RPD and Dr. Hauenstermann and Mr. Mrazek regarding these studies resulted in agreements for P&VE and Astrionics personnel to provide, on an informal basis, such assistance as will be required to formulate and obtain approval for this micrometeoroid satellite project. Although these studies are non-committal regarding MSFC's contributions to a potential project, I would appreciate it if you could give me your viewpoints in this respect at an early time. ACTION REQUIRED. → Let's discuss this in more detail E.S.

2. RESEARCH INSTITUTE: Dr. Small chaired a meeting on July 31 attended by Headquarters, MSFC, and University of Alabama personnel to further develop the Research Institute proposal. The meeting resulted in the understanding that the University should expect an initial grant of $1.2 M spread over three years, with an operating level of some $600 K per year by supplementary funding. $600K first year, $400 K second year, $200K third year; then ask for more during first 4 years. Jim

3. OMSF SUPPORTING RESEARCH: In my NOTES of 7-30-62 (Attachment #1), it was mentioned that OMSF had submitted a supporting technology request to Dr. Seaman's office for approval. During my trip to Washington last week, I obtained a copy of this submission, which included nineteen individual tasks proposed by MSFC along with tasks proposed by OMSF and other field centers. Total 1st Quarter MSFC funding involved is now 1.39 M for Launch Vehicle Supporting Technology, and 1.4 M for Propulsion Supporting Technology, not the 4 M total reported in the NOTES of 7-30-62. A point of particular significance is that any supporting technology work which is to be sponsored by OMSF in the future will require approval from Dr. Seaman's office on an individual task (contract) basis. This procedure was apparently implemented by Dr. Seaman's office to assure that other Headquarters program offices will not sponsor work that should be under the cognizance of OART. ✓

4. LUNAR LOGISTICS SUPPORT: Mr. G. Bucher is presently working on a report that compares payload capabilities, mission objectives, measuring programs, potential results, availability, and time schedules of a number of unmanned lunar vehicles based on Atlas Agena; Atlas Centaur; C-1; C-1B; and C-5. ✓

* Jim but written first.

B 8-6

NOTES 8-6-62 WIESNER

1. F-1 PROGRAM: Two tests have been run on engine 006. One was at 1400K thrust level for 8.8 seconds and the other was 1500K for 7 seconds. To date these tests fail to confirm the theory that impeller blade wake frequency oscillations getting to the injector may have caused the recent incidents on engines 007 and 008.

The F-1 Engine (Mockup) and the engine support structure have been received at MSFC and are located in Building 4706. ✓

2. M-1 PROGRAM: The following ground rules, based on the present M-1 Development Plan and Addendum, evolved from internal MSFC meetings and meetings between MSFC and NASA Headquarters: (1) Costing based on 47-month program, (2) Period of performance based on 49-month program, (3) Omit test stand E-4A costs, (4) Buy all optional areas based on a 47-month "dollar" program and 49-month "time" program, (5) M-1 costing based on standard Government fiscal year.

In a meeting between Aerojet General Corporation and MSFC, Aerojet presented a revised program plan for additional M-1 analytical studies in the areas of: (1) Thrust vector control, (2) Turbopumps, and (3) Thrust chamber performance. Following their presentation, an in-house review was conducted on the revised M-1 program approach. ✓

3. J-2 PROGRAM: A J-2 Engine Technical Program Review Meeting and a J-2 Engine/S-II and S-IVB Stage Interface Meeting were held at MSFC on 7-25/26-62 with participation by all contractors. The action items from these meetings have been distributed and the minutes will be released in the near future.

The firm proposal for the engine modification to extend the firing duration to 500 seconds was received at MSFC on 7-30-62.

A meeting will be held at Rocketdyne on 8-7-62 with attendees from NASA/Lewis and MSFC, for the purpose of discussing thrust chamber fabrication problems. ✓

4. H-1 PROGRAM: Two samples of the outboard engine (Rocketdyne) new design turbine exhaust hood have completed in excess of 2000 seconds testing at Rocketdyne. Both hoods developed small hairline cracks in a reinforcing band, but no gas leaks developed. Development on this component is continuing.

5. RL10 PROGRAM: Pratt and Whitney Aircraft (PSWA) has successfully run three throttling tests on the RL10A-1 engine which was modified for this purpose. The engine has successfully demonstrated throttlability down to approximately 23% of rated thrust (e.g. down to 3450 lbs.).

Modified gimbals are being expedited by PSWA for the Centaur F-2 and F-3 vehicles. A crew of PSWA personnel will install the modified gimbals on F-2 and F-3. ✓

6. WIESNER COMMITTEE VISIT TO ROCKETDYNE: Mr. Belew has arranged for briefing of Office of Engine Management personnel--also representative of Mr. Paul's Branch--on material to be presented by Rocketdyne to the Wiesner Committee (PSAC) 8-8-62. Mr. Belew will also try to determine reaction of the committee after the presentation. Presentation to MSFC personnel will be made before presentation to PSAC. ✓

August 13, 1962

B 8/15

NOTES 8-13-62 GORMAN

1. Civil Service Inspection Team: Approximately 65 MSFC personnel have requested personal interviews with the Civil Service Inspection Team. You will be kept informed as we learn more. ✓

Yes, please
B

NOTES 8/13/62 CONSTAN B 8/15

1. ROOF FOR MANUFACTURING BUILDING

Funding for replacement of roof of the Manufacturing Building was programmed as a FY 64 budget line item. Subsequently, it was determined that the roof should be replaced as soon as possible due to poor conditions. In view of this determination, action is being initiated to have this roof project moved from the FY 64 budget to the FY 63 budget. ✓

2. CONSTRUCTION COORDINATING COMMITTEE

This committee with representatives of P&C and FEO as members and with a Michoud representative acting as chairman was established on August 9, 1962. Chrysler, Boeing, AE Contractor and the Construction Management Contractor will serve as consultants for the committee. The prime purpose of this committee is to establish priorities for construction of facilities at Michoud and to resolve interfare issues. ✓

3. STORM DRAINAGE

The drains under the Manufacturing Building have been inspected and found to be in sad condition. Lines are broken in many areas constituting wash-out of earth fill and obstructions in the lines. Action is being initiated to have a project of about $250,000 added to the Mason-Rust contract to have the drains and other existing drainage deficiencies fixed. ✓

4. NASA-NEW ORLEANS COORDINATING COMMITTEE

This committee established by Mayor Schiro and chaired by Mr. Coleman has done an outstanding job in acquainting the community of New Orleans with NASA and its role in the nation's space program. Further the committee greatly assisted NASA in getting started in New Orleans. It is now felt that the committee has accomplished its objective and should be discontinued. A letter to the New Orleans Mayor for your signature relative to abolishing the committee will be given to PIO for review today. ✓

5. OFFICE SPACE

The existing facilities at Michoud are not adequate to house the office type personnel at Michoud. Chrysler is making arrangements to have private industry construct a building for their use across the street and east of the existing office building. A similar arrangement is being considered for Boeing across the street and west of the existing building. Until these buildings are completed, Chrysler and Boeing will lease on a short term office space in down town New Orleans (Boeing presently is leasing about 40,000 sq. ft. in Claiborne Towers down town). ✓

NOTES 8-13-62 DEBUS B 8/15

1. Copy of Notes to Holmes attached. ✓

NOTES 8-13-62 DEBUS B 8/15

1. Centaur: The blockhouse equipment relocation and validation is progressing on schedule (complete 15 Aug) with the exception of the guidance GSE. Completion of the guidance GSE task was delayed pending resolution of details on relocation and modification of portions of the existing equipment.

Complex 36 and Hangar "H" are carried on AMR records as being assigned to the 6555th Test Wing for Centaur. In view of the cancellation of ADVENT for Centaur, LOC will forward a "routine" request to the Range for a change in their records to reflect assignment of Complex 36 and Hangar "H" to NASA for the Centaur Program.

Two meetings have been held this week between personnel of this office and Centaur GD/A personnel in an effort to establish better working relationships. Some progress has been made in this area.

2. Launch Noise Criteria for Prevention of Building Damage: Last January, we asked Regier, acoustic expert at Langley, to make a study of building damage potentials from the noise generated by large space vehicles, and to support von Gierke in this area (von Gierke is doing similar work on the effects on man). We have now received Regier's 19-page study, which can serve as a guide in the planning of launch facilities. Copies are being distributed to all LOC and MSFC personnel concerned.

3. Architect-Engineer Selection: Meeting held at District Engineer's Office, Jacksonville on 9 Aug 62 to discuss the Architect-Engineer firms who will be considered for selection to prepare the criteria for the VAB, Launch Complex 39. Representatives of LOC will jointly discuss and evaluate with the District Engineer the capabilities of these firms. The final selection will be made by the Office, Chief of Engineers, Washington. Our participation is to assist in the ultimate selection of the top priority firms for recommendation to Chief of Engineers.

4. Land Acquisition: Inquiry from Justice Department regarding land acquisition. Justice Dept has requested certain data concerning the 14,000 additional acres now under acquisition action. Their interest is generally in the physical security area. The Corps of Engineers has a similar interest. Information on which to formulate replies is being collected and developed.

5. MA-Information Center: NASA Hqs (thru LOC) will advertise for bids for a press center operation for MA-8. Bids will be solicited from various motels in Cocoa Beach, with the hope of arranging a contract by Sept. 1.

6. Auditorium: Arrangements being made to proceed with plans for a press center - auditorium arrangement in Cocoa Beach, to be included with LOC off-Cape office facilities. Arrangements are being made with O. B. Lloyd (NASA Hq, Chief of Information) and Edward Pierce (Assistant to Walter L. Lingle of Public Affairs). Will contract through LOC P&C using Headquarters funds.

7. General Accounting Office Visit: GAO reopens survey of AMR transportation (vehicle utilization). This is a carryover from previous entree by GAO in January 1962. "The work at the AFMTC concerns vehicles operated by all agencies and contractors utilizing the Center, and is not a review of NASA operations as such." (Quoted from GAO letter of January 18, 1962). NASA Audit Division has been notified.

8. Complex 39 Report: Technical Report on Mobile Launch Concept, Crawler Mode for OMSF is in final review.

9. MSC Apollo Project Office: By direction of MSC, a branch of the Apollo Project Office is being established at AMR-POD for the purpose of providing direct liaison with LOC and POD. This office is presently being organized by Mr. Emory Harris. It appears that MSC philosophy is to channel all information between North American-Apollo and LOC and POD through Project Office functions. NAA membership on Launch Operations Sub-panels has not been assigned as promised, and there seems to be two schools of thought at MSC on this subject. Indications are that the MSC Apollo Project Office will eventually exceed 300 in number.

10. Meeting with General Davis: In a regularly scheduled meeting with Commander, AMR, the following points were discussed: (a) Commercial airlines into Patrick AFB; (b) T-39 aircraft to LOC to be serviced and maintained by AFMTC; (c) Long range instrumentation plan; (d) Telemeter requirement study; (e) Alternate mission requirements for NASA projects; (f) Logistical planning group between NASA/AFMTC elements; (g) Program documentation; and (h) Visitor control. All of the items on the agenda require additional action by LOC/AFMTC. All actions were indicated and appropriate staff members are involved at the present time conducting studies in their appropriate areas. Final conclusions will be reported later.

11. LOC Deputy: Arrangements have been completed with all parties for G. Merritt Preston to act as the LOC Deputy during my absence for the period of 6 September to 3 October. Details will be completed and proper notification furnished to all parties concerned about this assignment.

12. Weekly Notes from LOC: In view of the fact that no comment has been returned on Weekly Notes submitted to OMSF, I have a question in my mind concerning the value thereof. I would appreciate your comments as to whether or not the reports should be continued and, if so, whether they could be made on a bi-weekly basis.

K.D. → To MSFC: yes, please.
To OMSF: ask Brainerd!

Replied already by Mr. Holmes to continue same. B

NOTES 8-7-62 DEBUS B 8/15

1. CTL: CTL Missile was fired successfully on time 1 August. Delays were caused by Range interference. ✓

2. Transfer of Assets from MSFC to LOC: Effective as of July 1, 1962 LOC received formal transfer of assets from MSFC as follows: (Rounded off)

Imprest Fund	$ 5,000.00
Real Property	11,100,000.00
Building	600,000.00
Equipment in Use	11,000,000.00 ✓

3. Notes to Holmes are attached. ✓

Revised 3:00 p.m., 8/8/62 (Tuesday)

Bob Hines:

Please let me know what we can do to help you get these NOTES in on time to be included with the others. Late submission means a week's delay which is bad from everyone's viewpoint. JCM 8-14

NOTES 8-7-62 DEBUS B 8/15

1. Union Demonstrations: Several demonstrations have occurred in the past week sponsored by the Transport Workers Union which have resulted in a minor slowing of egress and ingress of NASA employees. The guards at the Cape have signed a no strike pledge and it is anticipated that they would not join any walk out or strike. ✓

2. Real Estate Acquisition: Status of acquisition as of 27 July was as follows:

	Areas Acquired	Total Areas to be Acquired
Area I	8,005	8,005
Area II	13,198	25,500
Area III	10	38,500
Total	21,213	72,005 ✓

3. Atlas Agena-B: The Mariner R-II checkout is on schedule. We are again having problems with shaky lock with the GE guidance system and with the Atlas umbilicals. It is not expected that these problems as they now exist will delay the launch. We are also having troubles on the USAF and contractor relations. The old dual-responsibility problem, which is being studied but no action is forthcoming. ✓

4. SA-5 Schedule: Based on the approved slip of SA-5, the wet test vehicle for 37B will arrive on 5 April instead of 15 April as previously planned. ✓

5. Complex 39 Reprogramming Meeting: An in-house LOC/LVOD meeting was held July 30-31 in order to consider the effects of the OMSF proposed acceleration of the C-5 program together with the effects of the decisions made concerning Complex 39 mode of operation. From this meeting schedules were developed reflecting the consensus of the group as to realistic objectives that can be attained. Key dates and areas of anticipated difficulty were identified. Based on decisions made, new cost estimates were derived and will be used to modify the existing project requests originally sent to Hqs. This will permit funds to be supplied to fit the current requirements. The Facilities Office is working to provide revised cost estimates by this coming Friday. ✓

6. NASA Auditorium at Cape Area: Lingle, Assistant to Administrator for Public Affairs, made contact to determine status of auditorium for NASA at Cape. It seems that some concern has been expressed about our intended use of the new facilities at Cape Colony Inn, (possible conflict of interests). He was given all details of our plans for the new area auditorium. Also, I understand that he will prepare reply for this subject in NASA reply to DOD 72-page green paper. ✓

7. LOC Functional Relationships: In a follow-on meeting concerning the publication of LOC Functional Relationships and mission assignments, Mr. Carulli held a meeting on Thursday, 2 August, in Washington between the various centers and offices concerned. It is my understanding that JPL and Goddard wish to modify the relationships proposed for LOC. The

trend appears to be that instead of having space vehicle systems and LOC representing the total vehicle and spacecraft requirements to the Range, the various centers or offices want to have their own representation at the Range, separated by launch vehicle and spacecraft and/or mission. This will tend to again create multi-entries into AMR.

8. Diluzio: I received another letter from Diluzio indicating that he needed an additional two weeks prior to making a commitment to me. I granted this extension and briefed Mr. Siepert personally.

9. Meeting with MSC/LOC on GSE: On 2 August a meeting was held at MSC, Houston with Gilruth, Williams, Frick, Sloan, Debus, Petrone and Poppel on the relative roles and missions as well as the relation of the spacecraft check out center and check out equipment in the launch control center. Agreements reached in that meeting are the subject of detailed minutes being prepared at this time. In the meantime, however, Jim Sloan has the details and concurs with the basic concepts discussed. I also discussed the basic agreements with von Braun in Huntsville on 4 August.

NOTES - GEISSLER - 8-13-62 B 8/15

1. PRE-FLIGHT DETERMINATION OF VEHICLE RESPONSE TO WIND TURBULENCE: Improved determination of vehicle response to turbulent wind conditions is now possible due to acquisition of accurate detailed wind measurements provided primarily by the FPS-16 radar-spherical balloon technique. This technique was developed by personnel at the Marshall Space Flight Center, and the Air Force Cambridge Research Laboratories. Preliminary studies indicate a pattern in small scale turbulence which is typical and therefore, provides a more efficient analysis and control optimization prior to flight. A study was completed on the use of Power Spectral Density Analysis to predict system responses of Saturn C-1 to atmospheric turbulence. Calculated results compare favorably with both a cross-spectral analysis and actual flight data of SA-2 for the max q region. After additional spectral density data are obtained, criteria will be established which will assist in predicting system response levels for various atmospheric conditions. ✓

2. C-1 and C-5 AEROELASTICS: An all day meeting was held at MSFC on August 9 on the subject of aeroelastic test programs on C-1 and C-5. Experts from Langley, Ames, MSC and Boeing Company were present. The four current C-1, Block II aeroelastic programs (8% fully elastic model, quasi-elastic model, rigid body - fluctuating pressure model and rigid - induced dynamic loads model) were reviewed. All are progressing nicely, results should be forthcoming in the next few months. By the end of November we should be in a position to draw conclusions on the critical question of the aeroelastic compatibility of the APOLLO spacecraft with the C-1 vehicle. The acoustic and buffeting problem near the 45° flare at the base of the S-IV stage, and supporting test programs were reviewed. The main purpose was to seek advise from Ames and Langley people as to their feelings on the problem and whether present test efforts were commensurate with the problem severity. This was confirmed. A very ambitious aeroelastic program for C-5 was proposed by Boeing and the various pros and cons were discussed. They want to put a small scale closed loop control system into an elastic model inside the wind tunnel. The prevailing reaction of all non-Boeing participants was sceptical in particular in regard to the suggested auto pilot model. The possible merits are questionable and out of proportion of cost (our estimate - $500,000 to $1,000,000). ✓

3. DAC FLIGHT EVALUATION CAPABILITY: It was agreed that several M-AERO-F Saturn trajectory computer decks would be furnished DAC for building up their flight evaluation capability. ✓

B 8/15

NOTES 8-13-62 GORMAN

1. Civil Service Inspection Team: Approximately 65 MSFC personnel have requested personal interviews with the Civil Service Inspection Team. You will be kept informed as we learn more. ✓

Yes, please
B

B 8/15

NOTES 8-13-62 GRAU

1. SA-3 FINAL CHECKOUT: SA-3 is presently in Building 4708 undergoing alignment analysis. The present status of the problem involving main lox valve seals is that the seals will not be changed. This decision will permit holding to the original shipping schedule. ✓

2. +/ NASA-O INSPECTION SUPPORT FOR S-II: The manpower buildup at NASA-O is proceeding satisfactorily. The proposed manning for the S-II during FY '63 is approximately 80, with a larger group for Apollo. Due to the unexpected "de-centralization" of the S-II production, a question arises as to whether NASA-O should extend to Tulsa, for instance; or the Air Force resident should supply inspection support. An early study is planned on this item, but at present NASA-O is favored. ✓

3. S-IV STAGE: The Air Force manpower space allocation at DAC remains unfinalized. The best inside information from Western Contracts Management Region and NASA Headquarters is that the 62 spaces will be authorized. ✓

4. CENTAUR: In regard to the proposal of Mr. Dempsey to separate the Centaur Quality Assurance management from the project (Mr. Hansen), our combined resistance was evidently successful. Mr. Harr and Mr. McClure (Astronautics and Corporate Quality Chiefs) were here on August 9th, and indicated they did not propose to change the setup at this time, although they are attempting to lay the groundwork for a future reconsideration. ✓

Good! B

5. STANDARD SPACE LAUNCH VEHICLE: In answer to your question on 8-6-62 NOTES, the Air Force terminology Standard Space Launch Vehicle is 'Pentagon-Chinese' for the 35 Atlas D boosters procured by the Air Force. It is our understanding at the present that three of this group are scheduled for NASA missions. ✓

+/ Mr. Grau, according to our concept of Tulsa, we should not move inspectors there. Saturn - Lytans Office is scrutinizing all tasks and shop orders going from Downey to Tulsa with the purpose of allowing only work to go there which is not complicated and does not need in process - government - inspection. I suggest you get in contact with Dr Lange on this matter.

Rees 8-10-62

B 8/15

NOTES–HAEUSSERMANN 8/13

1. STATUS OF IBM ACTIONS: Comments to proposal on local efforts were submitted to P&C on 8/7. P&C has indicated they may be ready to negotiate by 8/15, and that there should be no problems in getting these contract actions signed off. Having a signed contract before 9/1 is quite necessary, recognizing the difficulties experienced with Boeing personnel, i. e. getting their families established for school and minimizing the disruptions of normal family functions. ✓

Reference notes of 8/6 concerning IBM's concern of their position with the RCA-110 (copy attached). It is deduced that this was in part precipitated by the fact that Quality Division has indicated a strong interest in IBM computers, such as the 1410 and 1620 as replacement for the PB 250. The distinction between the ASTR/LOC requirements for the RCA-110 and Quality Division computer requirements was clarified to IBM and reiterated that they would not be involved with decisions concerning the RCA-110. ✓

Discussions were held with Dr. Lange concerning the status and approach to take on the advanced guidance computer. Technology and preliminary design efforts would continue through 1/63. Actions would also be taken to proceed with development of a breadboard (1/63 - 1/64). The cost will be about $3 to $4 million. By May 63 schedules would be reviewed and determined if we were ready to go with a full program for application in C1b and C5. ✓

* 2. GENERAL ELECTRIC'S INTEGRATED CHECKOUT IMPLEMENTATION PLAN: The MSFC Automation Board is reviewing GE's Integrated Checkout Plan. This plan has borrowed liberally from the MSFC Automation Plan, even to the extent of proposing an Automatic Breadboard at GE's base of operations in Florida. ✓

* 3. AUTOMATIC CHECKOUT FACILITY (C-1): The area in the Breadboard Facility that will house the Automatic Checkout equipment and the I. U. is nearing completion. The S-1 substitute equipment is being installed. All facility power equipment has been installed and checked out.

The Chrysler personnel supporting this operation have been assigned duties associated with checking the equipment to be installed in the facility.

W. H.
I'd like to see this
place. Please arrange
with Bonine + Fichtner
B

NOTES 8/13/62 Helmburg B 8/15

1. S-1-4:
Preparations on schedule for firing 8/23/62.

2. CENTAUR TANK FATIGUE TEST:
Test was started 8/11/62 (Saturday). Progam called for two series of tests consisting of 15 pressure and vent cycles in each series with thorough inspection in between. After the 6th cycle, the LH_2 tank could no longer be pressurized denoting a tank rupture. Insulation will be removed today for inspection. Operational observations: (a) Compared to rigid tanks, this is a "beast" to handle. (b) GD/A personnel are too strongly tied back to San Diego they give the impression of just being "operators". ✓

3. S-IV BATTLESHIP PROGRAM AT SACTO:
(a) Complete LOX cold flow Wednesday, 8/8/62. (b) Hot firing scheduled for Friday, 8/17/62. ✓

4. SUBSYSTEM TESTING:
A full-scale test facility simulating the C-5 LOX suction line was completed and checked out using LN_2. This setup will be used to investigate the potential "geysering" hazard. "Geysering" was found to occur in an unprotected C-5 LOX suction line. Furhter tests with LOX will start this week. No change in the status of swing arms No. 2 and 3 for the SA-5 vehicle. Still waiting on DAC- and LOX-modified hardware for test. ✓

5. F-1 ENGINE TEST STAND:
Only one bid was received by Mobile for the first construction package and this bid exceeded the government's estimate. It has been re-advertised. ✓

6. WEST AREA C-5 TEST STAND:
Approval of re-programming action needed to award contract for tower pending in Washington. Action expected early this week. ✓

7. MTF:
In response to your request, the FY 1963 funding requirements for MTF are being re-studied. Every effort will be made to defer as much of the work as possible to subsequent fiscal years. This review will be completed on Tuesday, 8/14/62, and will be submitted to FEO for incorporation in other studies of the FY 1963 C of F program. An additional $100,000.00 has been received for S-II facility preliminary criteria at MTF. This will permit an immediate start on the criteria but additional funds will be required to complete the criteria. Negotiations for a contract modification with SCP for this initial effort are scheduled for 8/17/62. ✓

SIDE NOTE: H_2 vent valves, same as used on Centaur, have given additional trouble on scale model test tank at DAC. M-TEST has repeatedly requested that GD/A parallel these on F-2 (second Centaur flight stage) static firings, to no avail. ✓

B 8/15

NOTES 8-13-62 HOELZER

1. PRESENTATION BY DR. SCHULZ-ARENSTORFF ON PERIODIC ORBITS WHICH PERPETUALLY COME CLOSE TO THE EARTH AND MOON: The presentation by Dr. Schulz-Arenstorff has been given to personnel of both Aeroballistics and Computation Divisions and the interest in the significance of this research warrants a presentation to yourself and top management of MSFC. It may very well be that the results of this research could have implication on the planning of earth-moon transportation in the future.

H.H. Please lay this on with Bonnie (emphasis on results, not theory) B

NOTES 8-13-62 HUETER B 8/15

1. CENTAUR:

a. Vehicle F-2: New gimbal blocks designed to overcome high friction problems have been installed on the F-2 vehicle and every effort is being made to run the first cold flow test on 8-17. A liquid hydrogen vent valve was received by GD/A from the vendor on 8-8 and required minor rework. The valve was returned to the vendor, reworked, and has now been installed on the vehicle. Final checkout and inspection was performed 8-11. The current manufacturing and test schedules still support a Feb. 1963 launch. ✓

b. Vehicle F-3: As a result of thorough investigation and inspection, GD/A has decided to rework the F-3 tank, replacing skin segments and other affected sections of the tank. It is anticipated that the rework will take approximately 4 weeks. GD/A is endeavoring to reduce a projected 6 weeks delay in previous schedule. ✓

c. Centaur Evaluation: MSFC divisions' evaluations of Centaur were presented to the Marshall Board on 8-8 and to GD/A Centaur Project Office personnel on 8-10. GD/A is to evaluate the impact of the numerous recommendations and report their findings to MSFC within 2 weeks. ✓

d. Notes 7-16-62 Grau: Reference attachment to these Notes. There have been no recent indications that GD/A contemplates any change in the current projectized Centaur Quality Assurance organization. ✓

e. Notes 7-30-62 Grau: Reference Paragraph 3 of these Notes. The Astrionics Div. strongly recommends direct shipment of Centaur guidance sets from the manufacturer to AMR. Their position is based upon: (1) Excessive running time (as high as 3000 hrs.) on the -1 system due to redundant testing, (2) Poor delivery rate of the guidance sets, (3) Use of a "Shop Queen" set at GD/A, (4) Guidance testing at GD/A has resulted in a number of failures. The L&M Office will attempt to resolve any differences of opinions and establish an acceptable procedure. ✓

2. AGENA:

a. Mariner R-2: The launch scheduled for Fri., 8-17, has been rescheduled for 12:55 AM EST on Mon., 8-20. The reschedule was necessary to complete the checkout and validation of the Atlas booster guidance system and GSE. ✓

b. Added Payload for S-27 Topside Sounder: GSFC has proposed the addition of an instrumentation package payload in "Piggyback" position instead of the ballast presently planned. The instrumentation is to measure and monitor the vibration seen by the payload during flight. ✓

c. Nimbus A-4: Word has been received from NASA Hq. that the launch of Nimbus A-4 will slip at least 6 weeks. The slip is apparently due to spacecraft problems. LMSC has been advised to keep the Agena vehicle in storage for this additional period until complete rescheduling information becomes available. ✓

NOTES 8-13-62 Koelle

B 8/15

1. LUNAR LOGISTICS PROGRAM

We had a very good meeting on Monday and Tuesday with Doug Lord and Bill Taylor (they run these studies for Shea) and we can expect to get five (5) task assignments in this area. You can expect a letter from Dr. Shea on this subject early this week. We also assisted them in conducting the Bidder's Conference last Wednesday in Washington. We sent Joe deFries (on the "bus") and George Bucher (on payloads) to help answer questions. They will go back for proposal evaluation August 20.

2. NASA/AF PANEL ON HYPERSONIC PROPULSION SYSTEMS

I have been invited to attend a Panel Meeting this Thursday in Cleveland on the subject of airbreathing hypersonic propulsion systems for recoverable boosters and long range hypersonic aircraft. The objective of this meeting is to draft a policy statement (joint NASA/AF position) of what action should be taken in this area.

I could use this opportunity to discuss propulsion questions of the logistics vehicle with Bruce Lundin at Lewis. You will remember that during the last Council Meeting it was recommended that MSFC should call on Lewis Research Center to make use of their capabilities.

3. FUTURE PROJECTS STUDIES

Summary FY 1961 and 1962			
Company	FY 1961 (10^3)	FY 1962 (10^3)	Total (10^3)
Lockheed Corporation	530	679	1,209
Martin Aircraft	466	331	797
North American Aviation	528	234	762
General Dynamics/Astronautics	461	283	744
Space Technology Laboratories	313	253	566
Boeing Aircraft	104	289	393
Chance Vought/Corporation	208	149	357
Douglas Aircraft	211	73	284
RAND Corporation		156	156
Ryan Corporation	146		146
Ford/Aircraft		84	84
Northrop Aviation	57		57
12 companies	3,024	2,531	5,555

Note that we have received less support in the past year than in the previous year. You should be aware of this trend. We do not think that this is desirable.

While DeFries goes on the "bus" trying to save travel funds, Bucher goes "on payload" throwing money away like water ($1 bill/lb payload)
Haha.
Ross 8-16-62

B 8/15

NOTES 8-13-62 KUERS

1. SA-D1: The SA-D1 booster has been released to the Space Museum. ✓

2. SA-D5: The start of clustering of SA-D5 has been delayed due to the inability of Chance Vought to deliver tanks as scheduled. They have experienced a welding problem on the 105" tank. This has been overcome in conjunction with a redesign in this area. We expect to start clustering on about the 16th or 17th. ✓

3. Paddle Wheel Fixture: A 360°, 160" diameter girth weld was made on the Paddle Wheel Fixture on 1/2" thick 2219-T87 using a fusion pass followed with a second pass with the filler wire addition. The cylinders were mated together initially and tack welded on the back side since no tooling bars were used. This is the first time we have succeeded in making quality welds without the use of a back-up bar. This was possible because a power supply with very accurate voltage and current controls was used. The maximum misalignment noted during welding cycle was 0.060" which is considered negligible. The strength of the joints is well above the 35,000 psi ultimate design allowable. Negligible distortion was noted across the weld. ✓

4. F-1 Engine: Assembly of the F-1 Engine mock-up has been completed. ✓

5. Vertical Assembly Building: Pearce and Gresham, a reliable contractor who handled the 4705-4706 tie-in and the 4712 addition is expected to be selected as the contractor for the Vertical Assembly Building. The contract is presently being prepared for signature. Final approval from Washington on the contractor selection is expected immediately. Pearce and Gresham submitted a quotation of approximately $300,000 less than the Governments estimated cost. We would like to suggest that this money be authorized to the contractor for additional overtime to speed up construction. Building occupancy of the assembly area is scheduled for July 1963 (one month later than required) and equipment for the Hydrostatic test and cleaning station is scheduled for approximately three months later.

W.K. Status? B

B 8/15

NOTES 8-13-62, Lange

1. C-1: SA-3 Booster undergoing final checkout. LOX seals in engine may need replacement; may cause 10-day slip from 9-1-62. Decision expected today.

SA-4 Booster short firing is scheduled for 8-23-62. The long firing is scheduled for 9-6-62.

SA-5 Booster, 154" Instrument Unit, and SA-D5 - no change in status reported on 8-6-62.

S-IV - Dynamics Vehicle - expected to be in hydrostat tower by 8-15-62 for LOX and LH_2 tank cleaning.

All Systems Vehicle - Pressure checks in both positions completed; undergoing calibration tests. Completion in hydrostat tower is expected 8-15-62.

SA-5 - Forward interstage proof load test with 400,000 lbs axial load successfully completed. Completion date in assembly tower anticipated 8-21-62.

Transporter - road tests being made.

2. C-5: S-IC - Indication are that structural design is about six weeks in delay. Analysis is being made to determine if lost time can be made up.

Boeing documentation release procedures and format are being discussed with divisions. Final agreement on documentation release is expected within the week.

Michoud - High Bay Facility foundation design package is scheduled for delivery to P&C for bid advertisement on 8-20-62.

Contracts for activation of Equipment-and Tool-Maintenance, Minor Sub-Assembly and Mock-up areas are scheduled to be awarded with construction to start on 8-15-62. Funds to cover contracts are included in FY-62 1.1 Mill C of F.

Firm proposal for high pressure helium storage bottles (design, development, fabrication and test) was submitted by Boeing on 8-3-62.

Renovation of Claiborn Tower is complete. Contracting Officer authorized Boeing to negotiate lease of 50,000 sq. ft. additional office space in New Orleans.

* S-II - Total contract price for the development program through launch of $320,614,644 (incl. $20,192,316 fixed fee) was agreed with NAA on 8-6-62. Taken out during negotiation were J-2 GSE and customer connect panel, spill tests, base heating sub-contract and UDOP, Azusa & C-Band tracking aids. Further program reduction can be made by change order after contract is signed.

* S-IVB - HQ's approved hardware contract for $141,1 Mill including $9.1 Mill fixed fee. Significant increases are forthcoming to incorporate outstanding areas now being finalized.

* Basic HQ's approval of SACTO test facilities is awaiting Congressional approval of FY-63 appropriations.

Preliminary C-IB acceleration proposal solicited from DAC is expected 8-13-62.

3. Apollo: Information on time criteria of specific booster emergencies are being prepared for joint meeting with newly formed MSC Emergency Detection Committee.

Mechanical Integration Panel and Flight Mechanics Panel will meet this week at Houston.

4. Guidance Systems - On 8-6-62 the C-IB guidance, control and instrument design philosophy was discussed between ASTR, P&VE and SSO. In general, the C-IB Instrument Unit will be quite similar to that of C-5.

A meeting between ASTR and SSO is tentatively scheduled for 8-9-62 to discuss several IBM contracts and advanced computer development, as it applies to the C-IB Project.

Dr. Lange:
Please leave room at
the top of page for hole.
Jim 8-14

B 8/15

NOTES, 8-13-62, MAUS

During the next six weeks, we are going to be concentrating on the following major activities:

1. FY-63 FINANCIAL OPERATING PLAN - This is a quarterly funding breakout by project, stage, system, and sub-system for the FY-63 program. We expect that FY-63 funds will not be adequate to cover the total plan. A review of the problems involved is being prepared for you. This plan is due at OMSF September 4, 1962. ✓

2. FY 64 Budget Estimate
   A preliminary submission on dollar requirements by project for FY-64 through FY-69 and from FY-69 through completion of individual projects is due in OMSF September 4. ✓

   A final and much more detailed submission is due September 30. ✓

   Our submissions will include justification as to what the estimated dollars will buy in terms of schedules. ✓

3. LOR Program Consolidated Schedules
   Preliminary draft is due in OMSF September 4. ✓

   Detail flight and mission schedules with assumptions and related funding totals are being prepared. ✓

   Final submission is due September 30. ✓

4. LONG RANGE PLAN - Through coordination with M-FPO and M-RP, drafts have been completed on project items to be consolidated into the MSFC Long Range Plan. This document is due September 4. Documents will be forwarded to OMSF and to Mr. Hyatt's office concurrently. ✓

5. MANPOWER SURVEY - Guidelines are being prepared for a survey by Division and Office for current and future manpower requirements. This information is for internal use, and in support to efforts on the above items. ✓

Individual briefings for you will be arranged before submission to Headquarters. ✓

B 8/15

NOTES 8-13-62 MRAZEK

1. RIFT: NASA Headquarters has indicated acceptance of the Work Statement on Operational Vehicle Hazards Study (prepared by Advanced Flight Systems Branch). This is a $200,000 proposal study effort. ✓

2. BOEING PERSONNEL: Number onboard as of 8-8-62: 324. ✓

3. SPACE MAINTENANCE PROGRAM: The second phase of the joint MSC and MSFC space maintenance program will be performed at MSFC during the week of 8-13-62. This phase will be concerned with servicing the RL10-A3 engines with the servicemen wearing "space suits". The first phase of the program was performed at Rocketdyne during June, 1962, and was concerned with servicing the J-2 engines. ✓

4. PERSONNEL INFORMATION: This Division has a total of 480 professionals (PhD., M.S., B.S., etc.) and 118 subprofessionals (technicians, draftsmen) on the Civil Service roles. The mission of this Division is supported by 490 professional and 243 subprofessional contractors.

Total Division strength - 839 Civil Service. Total Contractor strength - 733. ✓

B 8/15

NOTES 8-13-62 Rudolph

1. Visit of OMSF People to MSFC:

Mr. Doug Lord and Mr. William Taylor of Dr. Shea's office were here on August 8 and 9 to see Mr. Koelle, Mr. Williams, and Dr. Stuhlinger. ✓

The discussion with Mr. Koelle covered: (a) Participation of Mr. deFries and Dr. Bucher in evaluation of contractor proposals for the LLS study contracts. (b) In-House assignment on LLS which contains five task orders. (c) The FY 63 funding for Future Project proposals, as requested by Future Projects Office. ✓

Dr. Stuhlinger and his staff discussed the complicated funding situation of the advanced research proposals. Mr. Lord assured his help. ✓

Mr. Lord discussed NOVA topics with Mr. Williams. ✓

2. Response to Statement of Requirements for Data in Support of Project APOLLO, Dated June 15, 1962.

(a) OSS answered with a document, comparing the requirements with the expected data return from the presently planned Ranger and Surveyor programs of OSS and recommending improvements. ✓

(b) Your people are also preparing comments to this statement. ✓

B 8/15

NOTES 8-13-62 Stuhlinger

1. CHARGED PARTICLE SHIELDING: Dr. Shelton attended a meeting at NASA Headquarters last week which was called by Dr. Roadman of the Office of Manned Space Flight to discuss space shielding problems. The meeting centered around a presentation by Manned Spacecraft Center expressing their opinion that charged particle radiation will not be a problem during travel to the moon. This is a complete reversal of the viewpoint expressed six months ago when MSC tried to use the urgency of the radiation danger to Apollo to justify their grab of the MSFC program in the radiation area.

2. LUNAR LOGISTICS SUPPORT SYSTEM: Mr. C. Bucher of Research Projects Division and Mr. Joe deFries of Central Planning Office attended bidders conferences last week for studies on lunar logistics payloads and a lunar logistic spacecraft bus respectively, which OMSF (Dr. Shea's office) will contract for in the near future. MSFC has been invited to participate in evaluation of proposals, selection of successful contractor, supervision of contract work, and evaluation of results. ✓

3. OMSF SUPPORTING RESEARCH: Dr. Doug Lord, Director for Systems Analysis under Dr. Shea, visited Research Projects Division to discuss MSFC's research program. While our research program dealings with OMSF in the past concentrated around Mr. N. Rafel, they will in the future take place with Mr. Rafel, Dr. Lord, Mr. E. Hall, Mr. Bessio and possibly others. ✓

4. SPACE SCIENCE SUMMER STUDY: I attended a two day meeting at the State University of Iowa for the wind-up session of the Space Science Summer Study, where the National Academy of Sciences reviewed the NASA scientific space program upon request of Mr. Webb. A special trip report on this very interesting meeting was forwarded to you. ✓

5. C-1 LUNAR LOGISTICS VEHICLE: I had short discussions with Dr. Shea, Dr. Pickering and Dr. Newell on the inclusion of the C-1 vehicle in our preliminary studies of a lunar logistics vehicle. They fully endorsed this step. ✓

E.S.
C-1 or C-1b or both?
B

NOTES 8-13-62 WEIDNER B 8/15

1. F-1 PROGRAM: A full-scale F-1 engine mockup has been received at MSFC and is being assembled.

Engine 006 sustained a split thrust chamber tube during a 10-second firing on 8-4-62, following injector replacement. In-place repair of the split has been accomplished.

2. RL10 PROGRAM: Pratt & Whitney Aircraft has completed modification of the engine-throttling test stand and engine to permit engine throttling down to 10% of rated thrust. Three throttling tests have been completed. The minimum thrust level reached during these tests was 23% of rated thrust. Funds allocated for this contract have been depleted and testing is now being delayed pending receipt of additional funds.

3. H-1 PROGRAM: An engine failure occurred at canyon II on 8-8-62. This engine had the flat-faced injector without baffles. The engine was calibrated to operate at 188K thrust; however, the actual thrust was approximately 208K. Due to an operator error the engine was allowed to continue operation at this level for 38 seconds, at which time rough combustion occurred. The rough combustion safety device triggered but actual cutoff was not obtained in time to prevent a catastrophic failure. The engine was completely destroyed and some damage was also inflicted on the test stand. No more engines without baffle injectors will be tested at levels exceeding 165K thrust.

4. C-5: On 8-8-62, the Wiesner Committee (under Golovin) discussed with Rocketdyne increasing the C-5 payload capability from 90,000 lbs to 110,000 lbs. Rocketdyne recommended the following:

S-IC: Uprate F-1 Engine thrust to 1800K

S-II:
- a. Uprate J-2 thrust to 215K
- b. Add skirt to thrust chamber to 40:1 expansion ratio
- c. Modify injector
- d. Add sixth engine to S-II (looks inaccessible from our layout.)

Rocketdyne plans two year program to do above. (We are very doubtful.)

Here we go!!
B

H.W.
Who pays? Golovin?

August 20, 1962

Hans Hueter
for info.

B 8/21

NOTES 8-20-62 GORMAN

1. GENERAL ACCOUNTING OFFICE INVESTIGATION OF CENTAUR
We have been informed that the GAO plans a comprehensive review and investigation of the entire Centaur project at NASA Headquarters and Marshall, supplemented by audits at the contractors' plants. I am to receive a more detailed explanation from Ray Einhorn.

2. LINDE COMPANY - We have been informed that the Linde Company has bought 110 acres on the Intercoastal Waterway just east of the Michoud Canal. Their plans call for a 350 ton per day plant to produce liquid oxygen, liquid nitrogen, and liquid hydrogen.

3. AIRCRAFT MAINTENANCE - Davis Foxworthy inspected the facilities and maintenance procedures used to maintain the three aircraft provided the Center by Rocket City Air Activities. He informs me he is convinced that good maintenance practices and procedures are followed by mechnics properly certified by FAA under a supervisor certified by FAA as both mechanic and inspector.

4. LABOR PROBLEM - Even though we have been successful in obtaining an injunction against the unions, it appears that we are not out of the woods yet. All of the crafts, including the electricians, reported for work this morning, but drifted away shortly thereafter. If the contractors are unable to man the jobs, we may have to go for a contempt citation against the unions, or terminate the existing contracts and readvertise. We hope to work it out without having to resort to either of these courses of action.

5. JET SERVICE TO THE WEST COAST - Delta Airlines has appealed the CAB's negative decision on jet service from Huntsville to the West Coast. NASA will support this appeal. This might be a good item to discuss with General McMorrow on Thursday.

Note: Mr. Katz is handling this agenda and briefing folder.
JCM 8-21

OK.

Mr. Newby answered on Notes 8-27-62

Dave Newby

Why not closer to MTF?
We don't need the stuff at Michoud!

B

NOTES 8/20/62 CONSTAN B 8/21

1. OFFICE SPACE

The Boeing Company was authorized by letter dated August 15, 1962, to solicit proposals from private concerns willing to construct an engineering and office building near the Michoud plant under suitable lease arrangements.

2. VISITORS

Dr. Glen T. Wilson, Member of Senate Space Committee Staff, and Mr. Jack Brown, Office of Legislative Affairs, NASA Headquarters, will visit Michoud on August 22, 1962. The purpose of the visit is for Dr. Wilson to receive an informal briefing relative to Michoud Facility responsibilities and to tour the Michoud Facility and the Computer Facility.

NOTES 8-20-62 DEBUS B 8/21

1. Hydrogen Venting Experiment: This experiment has been scrubbed for SA-4 now due to excessive hardware costs and the lack of instrumentation for the tests. This also scrubs the second swing arm re-requirement for SA-4. ✓

2. Notes: I recognize that my "notes" to you have been delayed for a day in order to attach copies of my notes to Holmes which are due on Tuesday. O.K.? OK B

3. See copy of Holmes' notes attached. ✓

Received 3:15 P.M. 8/21/62.

6. Procurement on Crawler: In a meeting on 20 August with LOC personnel (P&C and technical), it was decided that an RFQ would be prepared for the crawler and distributed to industrial firms who have a capability in this field. An 85-day period will be required for the advertising, receipt of proposals, evaluation and contract finalization. Action has been started as of today to pursue this course, which I believe is the shortest route to a contract.

7. Reprogramming: MSFC has indicated that it will be some 170 million dollars short for FY 63/64 in their R&D program and that reprogramming of facilities funds is considered, LOC will probably have some overruns in the "39" complex areas for 64/65. I am investigating the various "trade-offs" and ramifications jointly with MSFC. Will advise of developments. Good

8. NOVA Launch Facilities Study: As of August 17, I had indicated the following actions for the RFQ of the NOVA launch facilities study:

a. Phase I: To cover the conceptual studies necessary to support the NOVA Vehicle Study up to the vehicle selection period (December 1 thru 14, 1962). Contract effort in this area to be limited to not more than $100,000.

b. Phase III ($300,000): Timing, direction and total effort for Phase II to be determined after Phase I is complete. Contractor for Phase II would also be determined at this time, although desirable to continue with the same contractor, first phase performance and requirements for the second phase could dictate the selection of a new contractor for Phase II.

9. Proposed Hazards Tests: LOC, MSFC & AFMTC have combined efforts to have a series of tests conducted by Ballistics Research Laboratory on the liquid fuels combinations, liquid/solid propellant combinations. The purpose is to establish a "maximum credible" launch site reaction (as distinguished from "theoretical maximum") as related to "TNT" equivalency. The objectives of the tests will be to establish standardized, reproducible methods for evaluating significant parameters of reactions such as initiation and mixing time, vehicle configurations, scaling factors, etc. Initial tests will be started on LOX-LH as well as RP-1-LOX; followed by UDMH-N_2O_4 combinations of LOX-LH, and solids. The Armed Services Explosive Safety Board, DOD, and AEC representatives have expressed interest in these tests in order to provide realistic safety standards agreed to by all. LOC, MSFC and AFMTC have agreed to fund approximately $250,000 each for the first year's effort. (Total program effort may run over one million dollars including propellant costs.)

10. Mercury-Redstone: Arrangements are being completed for LOC to obtain a Mercury-Redstone for display at PAFB Tech Lab (NASA is not represented in the missile display at the present time). The dummy

capsule and escape tower are being supplied by MSC and a booster is being acquired from MSFC. Inasmuch as this full size display attracts considerable attention from tourists and it is known as "photographers alley," it would appear that NASA Headquarters would consider this an excellent source of publicity, and provide other types of space vehicle configurations for display if possible. ✓

NOTES - GEISSLER - 8-20-62 B 8/2/

1. ATLAS/AGENA THIRD STAGE: A parametric performance study of two different solid propellant equipped third stages (the X-259 and 30KS-8000) using available guidance packages, was made to determine whether the stages could be used on the Atlas/Agena Vehicle to accomplish Syncom II (Goddard), Solar Probe (Ames), and Fire II (Langley) missions. Results showed that all of the above missions could not be met with either stage because of the following reasons: Syncom II: The 30KS-8000 is marginal for this mission; X-259 probably can achieve the mission. Solar Probe: Neither stage can meet the Ames solar probe velocity requirement. (approximately 15, 100 met/sec is required to achieve an orbit perihelion of 0.33 astronomical units.) Fire II: Both stages could meet this mission. ✓

* gem 2. MSFC-MSC PANEL ON FLIGHT MECHANICS, DYNAMICS, AND CONTROL: This panel met at MSC on August 15, 1962. The two main agenda items were; (1) C-1 Flight Mission Changes, and (2) Abort from Manned C-1 Vehicles During Propelled Flight. Concerning the mission changes, the Apollo boiler-plate payload will be available for SA-6; dynamic test model will be delivered in February 1963; Marshall must reappraise dynamic test schedule before making commitment to fly SA-6 with Apollo payload; MSC prefers to deliver only one payload for SA-7 and SA-8, which suggests flying dynamic test model on SA-8 without active launch escape system or tower separation system. Concerning abort problems, MSC requested explosion characteristics of S-I and S-IV stages at various altitude levels. From this they will determine acceleration history for LES, safe landing distance for pad abort, tower separation time in normal flight and abort procedures from S-IV after tower separation. MSC feels that the explosion of the S-IV stage in vacuum will have no serious effect on Apollo. ✓

Other abort problems discussed and the responsible organizations are: Emergency detection system (MSFC-MSC), flight dynamic conditions at time of abort (MSFC), attitude changes prior to abort command in critical situations (MSFC), trajectory shaping to alleviate re-entry loads (MSFC), re-entry lift modulation through banking (not rolling) (NAA), guidance mode preparation for abort-trajectories for selected landing points (MIT), and selection of abort landing sites from operational viewpoints (MSC). ✓

Hans Hueter
For info.

NOTES 8-20-62 GORMAN

B 8/21

1. GENERAL ACCOUNTING OFFICE INVESTIGATION OF CENTAUR
We have been informed that the GAO plans a comprehensive review and investigation of the entire Centaur project at NASA Headquarters and Marshall, supplemented by audits at the contractors' plants. I am to receive a more detailed explanation from Ray Einhorn. ✓

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OK.

Dave Newby

Why not closer to MTF?
We don't need the stuff at Michoud!

B

NOTES 8-20-62 GRAU B 8/21

*1. SA-3 FINAL CHECKOUT: Post-static weight and alignment tests were completed August 15, 1962. SA-3 is presently in the Performance Test Area undergoing tests on the ST-124P stabilizer system. The decision has been reached to retain liquid level sensors and to make no change in the main Lox valve seals.

2. SA-4 STATIC TESTING: Quality Assurance Division personnel continue to support the Test Division in the testing of SA-4 on the test stand.

3. SA-5 ENGINE STATUS: The inboard engines have been modified and released for modification testing. The outboard engines are being modified by Manufacturing Engineering Division and are approximately 70% complete.

4. AUTOMATION: The following program will be available for the post-static checkout of vehicle SA-4.

a. Universal Measuring Adapter calibrate
b. Telemeter vs. hardwire calibration
c. Subcarrier oscillator scan and adjust
d. Telemeter station discriminator scan and adjust

*5. SYSTEMS CHECKOUT AND PREFLIGHT TESTING WORKING GROUP: The in-house Working Group members met August 7th with the following conclusions:

a. Contractual coverage will be requested from Saturn Systems Office to allow "disapproval only" review of component test procedures.

b. A list will be published shortly for all S-IV tests by name and number, indicating the primary MSFC segment for test procedure approval. This will be supplemented by a list of secondary review segments who may comment on the procedures. The method of transmitting approval was established with DAC at the last meeting.

c. Calibration ports do not exist for the pressure gages on the upper stages. On-board testing of the gages requires breaking into the lines or accepting one or two existing operational pressure "check points". Design organizations will be requested to supply increased testing capability.

→ Who forgot to specify them? DF B

B8-21

NOTES - HAEUSSERMANN, 8-20-62

No submission for this week.

Ms. Kroeger:
We would like to have a weekly report even in Dr. Haeussermann's absence.
Thanks,
JCM 8-21

NOTES 8/20/62 Heimburg B 8/21

* qcm 1. SA-4:
Preparations progressing satisfactorily. Static firing now planned 8/24/62. ✓

2. CENTAUR:
Centaur Tank Fatigue Test - Records show tankage failed after/or during second pressure cycle. All liquid hydrogen gone after 6th cycle. GD/A claims failure occurred at old patch previously welded. Test results from this test not worth a D---.

F-2 Static Firing - Static firing of the second flight stage has been delayed indefinitely pending P&VE team review of results of fatigue test conducted here and radiograph records of F-2 tankage. ✓

* qcm 3. DAC S-IV BATTLESHIP TEST PROGRAM:
A 10-second (all engine) static firing was successfully performed on the S-IV battleship stage. Several prevalve and relief valves leaked and/or failed, but redundancy allowed test to proceed. Member of MSFC TERT team found instrumentation error and corrected same, which would have delayed test if undetected. ✓

4. MTF:
The results of the review of MTF FY 63 funding will be presented to you and Dr. Rees as early as can be scheduled. 8/22 The negotiations for preliminary S-II test facility criteria with S&P has now been scheduled for Tuesday, 8/21/62. Proposals were received on Friday, 8/17/62, and two days are required for P&C review before negotiations. ✓

5. MARINE ACTIVITIES:
SA-3 will depart MSFC dock, 9/1/62. Due to vertical clearance restrictions at Florence, Ala., vessel will be required to pass under the new railroad lift span between midnight and 6 a.m. on 9/2/62, at which time pool elevations will be lowest and estimated time of arrival at Cape Canaveral, noon, 9/10/62. ✓

* qcm 6. WEST AREA (C-5) TEST STAND:
Reprogramming of funds has not been approved in Washington. There will be a day-for-day slip in schedule until this action is complete, which is needed before Mobile can let a contract for the stand construction. Recommend that steps be taken to simplify and expedite facility funding, similar to system used by Corps of Engineers.

7. F-1 ENGINE STAND:
Bids taken the second time for first construction package still above government estimate, but due to critical schedule, contract award will be made [redacted]. ✓

→ K. H.
What action has been taken?
B

B 8/21

NOTES 8-20-62 HOELZER

Negative report.

NOTES 8-20-62 Koelle B 8/21

1. NOVA

We had our NOVA Orientation meeting last Wednesday with Martin and GD/A. I presented your thoughts on the NOVA philosophy and development objective. I was surprised to hear from Norm Rafel that "Headquarters" agrees with us completely! Whenever it is convenient, Frank and I can give you a run down on the meeting and plans. HHK Please lay on w/ Bonnie B

* 2. MANNED REUSABLE VEHICLES

Last Thursday I (Mr. Koelle) attended a NASA/AF Panel Meeting charged with the responsibility of drafting a document stating the objectives and recommended courses of action on reusable launch vehicles. The emphasis was on the aerospace plane concept. There appears to be agreement that the technology of manned reusable aerospace vehicles should be pushed. The AF holds out for a single stage airbreathing vehicle to earth orbit. NASA panel members took the position that single stage to orbit is not feasible with airbreathing systems for a long time to come. I expect to receive a draft of the recommendation this week and will send it on to you with my comments.

3. COST ESTIMATING AND DATA PROCESSING PROCEDURES

I discussed this subject with Mr. Wyatt and his staff in Washington last Friday. The purpose of the meeting was to get ready for a presentation to Dr. Seamans in about three weeks. There seems to be general agreement that there is room for improvement in the above area. Before I go to see Dr. Seamans, I would appreciate discussing my slides with you and Dr. Rees briefly. Can I set up an appointment with your secretary in about 2 weeks? O.K B

B 8/21

NOTES 8-20-62 KUERS

1. Hydrostatic Test Tower: Pearce and Gresham have withdrawn their bid on the Hydrostatic Test Tower due to a $200,000 calculation error. Consequently, the contract will probably be awarded to the second low bidder, Sullivan, Long and Haggerty of Birmingham. As a result of this bid withdrawal, the Facilities Office had to request additional funds from Washington. The approval of these funds is presently being held-up in Mr. Canwright's office due to some questions resulting from a conversation between Mr. Rees and Mr. Canwright.

Eberhard
Just what?
B

2. Boeing Contract: Present indications are that Boeing will not meet delivery schedules as established under Item II of the Boeing contract. Concentrated efforts are being made by this Division, in conjunction with Boeing, to maintain these schedules. It is felt there exists a lack of communications between the Boeing Booster Branch, Huntsville, and Boeing, Wichita, which has contributed to this problem. I have discussed this with Mr. Stoner and believe it will be under control shortly.

B 8/21

NOTES 8-20-62, Lange

1. C-1: S-1-3 - in final checkout, will be shipped 9-1-62.
S-1-4 - short duration firing scheduled 8-23-62, long duration firing 9-6-62.
S-1-5, 154" Instrument Unit & SA-D5 - no change in status reported on 8-13-62.
* S-IV - Battleship - Six engine hot firing with 10 sec. duration was successfully completed 8-17-62. 60 sec. test will follow in about 2 weeks.
Dynamics Vehicle - insulation scheduled to be completed 8-21-62, tank cleaning in hydrostatic tower to start 8-23-62.
All Systems Vehicle - hydrostatic tests and cleaning in tower were completed 8-17-62.
SA-5 Stage - welding of cylindrical tank section to LOX tank assembly and cylindrical tank assembly to forward bulkhead is continuing. Completion of tank assembly is expected 8-24-62.

2. C-5: S-IC - A second submission of Boeing's technical proposal was received 8-17-62 and is being evaluated. Cost proposal is expected by 8-20-62.
Preliminary list of F-1 engine peculiar GSE has been prepared to establish GFE categories for contract negotiations with Boeing.
* Michoud - Boeing has committed all C of F funds involved in activation of S-IC portion of Michoud Plant and cannot proceed further until additional C of F funds are received from Headquarters. Most urgently required are $196,060 for AE work.
* S-II - Contract is still held at WOO, Headquarters requested to negotiate fee based on $258 M proposal. NAA's reaction to this is unknown.
Extension of letter contract (expiring 8-21-62) for additional 30 days will be necessary if contract is not signed by Headquarters on 8-20-62.
AF System Command (Mr. Ackermann) endorsed approval of battleship test program at Santa Susana. The Inspector General for Safety at Norton AFB has yet to sign the final approval. To expedite the time in channels, waiver for All Systems test was sent 8-16-62 to all cognizant AF agencies.

Hurrah! B

3. Missions: M-SAT is coordinating with JPL a study of a mission in electric propulsion test vehicles (15K spacecraft in 500 NM orbit) consisting of three launches in 1967-68.
A similar request has been made by Lewis for a 2-stage C-1 to test SNAP-8 reactor in space environment; i.e. 5000 lbs. in 500 NM orbit to demonstrate 90 days minimum operational time and consisting of small arc jets and ion engines. Secondary mission may be a test craft in 24-hour orbit.
Convair seems to be interested in a 2-stage C-1 as launcher in Project ORION (Putt-Putt). M-SAT is investigating unofficially the details.

O.K.

I hope all this is done in closest cooperation with Koelle! That's his job! B

Please keep me posted. B

NOTES 8-20-62 MAUS B 8/21

1. STUDY OF MSFC RESIDENT MANAGERS - Phase I has been completed in the study of organization and responsibility assignments to MSFC Resident Managers in contractor plants. The progress report and presentation ~~made to Dr. Rees last week~~ included recommendations on:

a. Announcement of MSFC philosophy of management as applied to Resident Offices.

b. Uniform office titles and graduated position titles at Resident Offices.

c. Responsibility statements for Resident Offices.

Items a and b were proposed and agreed upon; item c will be further refined during continued study with key project management people. Attention is also being given to various schemes for upgrading the stature of the Resident Management Offices.

2. MANAGEMENT COUNCIL MEETING - The MSFC Program Status Report for the August 28 Management Council Meeting will place emphasis on SATURN S-1C stage development activities. A factual report covering the manufacturing plan, test plan, testing and manufacturing facilities, and the Marshall - Boeing relationship will be made.

3. OSS PROPOSED PROGRAMS FOR FY-63 - Office of Space Sciences furnished MSFC a summary of proposed OSS FY-63 programs as recommended to the Associate Administrator, and requested comments and recommendations. We are reviewing with Light and Medium Vehicles Office.

4. LOR SCHEDULES, FY-63 FINANCIAL OPERATING PLAN, AND FY-64 BUDGET ESTIMATES - Based on results of your meeting with Mr. Holmes, a package is being distributed today to the systems offices and divisions containing broad guidelines and assumptions for preparation of:

FY-63 Financial Operating Plan
FY-64 (thru program completion) Budget Estimates
LOR Program Schedules
Long Range Plan
MSFC Internal Manpower Survey

NOTES 8-20-62 MRAZEK

B 8/21

1. CAMERA CAPSULE RECOVERY: Two SATURN movie camera capsules were recovered from an ATLAS missile shot at the Cape 8-13-62. One capsule (camera #3, see attachment 1) had a damaged float bag (balloon) and the camera compartment was indented near the ejection slot (see attachment 2). The cloth balloon cover had two burned holes (1 3/4-inch diameter and 1-inch diameter) and a 2-inch diameter scorched place, all in a small area of balloon. This capsule was ejected along the side of the ATLAS and into the blast of the sustainer engine. Both capsules had broken quartz windows and one capsule also had a broken lens; however, no water entered the camera compartment. The recovered films were not damaged. ✓

2. RIFT: The Nuclear Vehicle Projects Office has asked NASA Headquarters for time to present a complete story to Dr. Seamans on the Lockheed-operated Georgia Nuclear Laboratory (GNL), Dawsonville, Ga., from a RIFT Program standpoint. ✓

RIFT facilities are the major immediate problem in the program. The Facilities Engineering Office, as RIFT facility manager, is on top of the program except in facility areas where Test Division is involved. The lack of definition and division of responsibility between Facilities Engineering Office and Test Division in management of NRDS facilities design and construction is contributing to a possible schedule slippage. ✓

3. CENTAUR: Failure of weld repairs in the Centaur tank exposed to cyclic pressure testing at M-TEST has caused all work on the Centaur F-2 static test program to be halted. Similar repairs, eight in number, have been made on the F-2 hydrogen tank. An MSFC team has been sent to General Dynamics/Astronautics to review the condition of the F-2 tank and recommend a course of action to be taken. ✓

4. BOEING PERSONNEL: Onboard as of 8-16-62: 314. ✓

* 5. F-1 GIMBAL SYSTEM: A serious delay has been encountered in evaluating the Rocketdyne gimbal system drawings. Drawings and data previously promised by Rocketdyne have not been received. The direction of the effort in the gimbal system area has been slowed due to lack of data. ✓

Attachment #1: Camera Capsule Locations
Attachment #2: Typical Camera Capsule

→ Hans Maus / CP

Please have your Management Analysis Group look into this and work out a settlement. B

B 8/21

NOTES 8-20-62 Rudolph

1. Master Plan for Manned Lunar Landing:

My office is participating with MSFC and MSC in developing a Master Plan for Manned Lunar Landing within guidelines established by the Management Council Meeting on July 31, 1962.

2. Defining of the Abort Sensing and Implementation System:

One of my staff members who just attended the Flight Mechanics, Dynamics & Control Panel in Houston indicates there is an urgent need for defining the Abort Sensing and Implementation System during booster thrust phases. The spacecraft design is hampered until the dynamic abort loads for SATURN are established by MSFC.

3. Establishment of the Houston Office of Systems Engineering:

Mr. Joseph Quinn and Mr. Richard Hayes (Office of Systems) came down here to discuss the establishment of the Houston Office of Systems Engineering, Office of Systems. The office will be headed by Mr. Hayes and will be staffed by 5-10 people. Operation will start approximately September 4.

I briefed them on how I operate my office.

I am very much in favor of the Houston Office and feel that Dick Hayes and myself will work close together - for the benefit of the entire program.

NOTES 8-20-62 Stuhlinger B 8/21

1. MICROMETEOROID SATELLITE: In my NOTES of 8-6-62 (Attachment #1), the formulation of a micrometeoroid satellite project was discussed, you requested more details. Mr. Leonard of Mr. Boehme's group in Astrionics Division is going forward with studies to determine feasibility of putting up large detector surfaces in near-earth orbits by means of the Atlas-Agena vehicle. We will be prepared the first week in September to discuss with you the entire micrometeoroid programs at Marshall, and our proposals for extension of this program. Should we fix a date with Bonnie? ACTION REQUIRED. Yes B

2. MADKIN MT. ANTENNA: The proposed NASA letter from Mr. Buckley (OTDA) to General Bigelow declining the antenna was transmitted as written. (See NOTES of 7-16-62, Attachment #2). Mr. Fagan has prepared a fact sheet for General McMorrow for the August 26 Commander's Conference. He desires that there be no local activity or correspondence pertaining to the antenna during the next 7 to 9 months because the Kennedy Co. will be repairing the bearing during this time, and the installation cannot be used. Mr. Thompson was to prepare a letter to Mr. Fagan stating possible MSFC or Research Institute uses for the antenna. This letter will be withheld until the situation is clarified. I thought we definitely declined. Why reopen the issue? B

* 3. LAUNCH PAD LIGHTNING PROTECTION: Members of Research Projects Division and I visited LOD (Dr. Gruene) in Cape Canaveral to discuss possibilities of lightning protection which you had asked us to study. The result of the meeting was a request to General Electric Co. to formulate a Scope of Work according to detailed guidelines which were established during our meeting. When the Scope of Work is mutually acceptable, it will be incorporated into an existing GE Open End Contract as a Task Assignment. ✓

4. SUPPORTING RESEARCH: In the coordination of our research programs with the various Headquarters offices, we have encountered several basic difficulties, e.g., the lack of a clear delineation of office responsibilities which would enable us to submit the right task area to the right office; or the lack of an early indication of non-support of a given task by one office which would enable us to re-submit the same task to another office. Should we prepare a memo on these difficulties for your presentation at the Semi-Annual Management Meeting? ACTION REQUIRED. Mr. Mann will coordinate briefing material for you Yes

5. APPLICATIONS OFFICE: Mr. Thompson of RPD has been informed by Mr. Fong that Mr. Earl Steven's Industrial Applications Committee will visit MSFC September 6 and 7. This will be the first Center to be visited by the Committee, which is interested in activities of NASA which have potential industrial usage. Mr. Thompson, who has been briefed as to the purpose of the visit, will chair the meeting. ✓

6. ADVANCED RESEARCH AND TECHNOLOGY: Mr. Kinser of RPD and Messrs. Mixon and Dausman of Astrionics Division visited OART August 16, 1962, to discuss the Electronics Research Program. Working relationship between the OART Electronics Systems Program Office and MSFC seem quite good at this time. ✓

NOTES 8-20-62 WEIDNER B 8/21

1. RL10 PROGRAM: Negotiations on the follow-on R&D effort were conducted at Pratt and Whitney Aircraft during the week of 8-5-62. ✓

2. F-1 PROGRAM: A 100-second test has been run on engine 006 at full thrust. No significant problems from this test have been reported.
A short, ten-second test has also been conducted with engine 003. ✓

3. H-1 PROGRAM: As a result of the loss of an engine due to combustion instability on 8-8-62 the following corrective action has been taken by Rocketdyne to prevent a recurrence:

a. Flat face injectors will not be tested above 170K.

b. A redline thrust of 200K has been imposed on engines with baffled injectors and Mark 3H Turbopumps.

c. A redline thrust of 195K has been imposed on engines with baffled injectors and Mark 3 Turbopumps.

Note: Mark 3H Turbopump is redesigned Mark 3 for 188K thrust. ✓

4. J-2 PROGRAM: An incident report of the gas generator explosion on 8-13-62 was received from Rocketdyne on 8-15-62.

Detonations were experienced in the gas generator during start transition on the last three test runs of J-2 engine 002, the last of which resulted in damage to the gas generator and fuel pump turbine.

It is believed that the new purge port location did not adequately purge the gas generator body. In conjunction with a leaking LOX poppet, number 003 will have the purge port at the original location. ✓

August 27, 1962

B8/28

NOTES 8/27/62 GORMAN

1. LINDE COMPANY

On our notes for 8/20/62 Dr. von Braun ask the question "Why has the Linde Company bought land near Michoud rather than near MTF to build a plant for liquid oxygen, liquid nitrogen, and liquid hydrogen?" By far the largest cost in manufacturing and delivering these gases is the cost of electricity. The cost of electricity in the New Orleans area is 6 1/2 cents per kilowatt hour for first 10,000 KWH and 4 cents per KWH for all over 10,000 compared to 10 cents and 12 cents per KWH in Mississippi. The additional transportation costs are lost in the noise level of the savings in electrical costs. At least that is what the Linde people told me. ✓

2. STRIKE SITUATION

As far as we can determine we have a full contractor crew back at work. ✓

NOTES 8/27/62 CONSTAN

B 8/28

*1. MICHOUD VISIT

Mr. Glen T. Wilson, Member of the Senate Space Committee Staff, and Mr. Jack Brown, Member of NASA Office of Legislative Affairs, was given a general orientation and tour of the Michoud and Computer facilities on August 22, 1962. ✓

2. INDUSTRIAL RESERVE/SURPLUS SCREENING

Difficulty is being experienced in obtaining desirable equipment from industrial reserves. Permission to screen has been denied except for those items which are obsolete or worn-out.

*3. ROOF OF MANUFACTURING BUILDING

Design is complete for the replacement roof of the manufacturing building. When project approval and money is received from NASA Headquarters, immediate action will be taken to commence work. This item becomes more critical each day.

What in h.. is keeping it up??
B

G.C. / Harry Jordan

Why don't we bring the facts to Mr. Webb's attention? He may be ready to take it up with Sec. Gilpatrick. B

NOTES 8/27/62 DEBUS B

No NOTES received this date from Dr. Debus.

NOTES - GEISSLER - 8-27-62 B 8/28

1. C-5 LAUNCH VEHICLE WIND TUNNEL PROGRAMS: Representatives from all C-5 stage contractors, Langley, Lewis, and Ames Research Centers, NASA Headquarters and MSC convened at MSFC on August 21 to discuss the C-5 Launch Vehicle Wind Tunnel Programs. Management guidelines and communication media to be used by MSFC were discussed. The key element in the MSFC communications will be the air load manuals which will present a uniform set of aerodynamic data to all C-5 participants. This data would become official design data after proper coordination of the data within the working groups. Inputs to the manuals will come from NASA and from stage contractors. The management and communication concepts discussed were favorably received by all participants. Formal acceptance by MSC of the proposed management guidelines will be expected from Dr. Kuettner in the Saturn-Apollo Systems Integration Office.

2. NASA ENVIRONMENT CRITERIA SUB-COMMITTEE: On August 14 and 15 the first meeting of the NASA Environment Criteria Sub-Committee of the NASA Design Criteria Steering Committee was held at NASA Headquarters. The group was directed to restrict its work to vehicles of the Thor-Agena's size and larger. Included in the charter were activities pertaining to the induced, as well as the natural environments. It was evident that for the sub-committee to be successful, MSFC will have to make a strong contribution in terms of manpower and time. An MSFC position is being established with regard to the objectives of the Steering Committee and sub-committees, as well as the participation by MSFC. This matter was discussed in the last executive meeting and I am preparing a letter to Mr. Dixon for your signature, stating our position. O.K.

3. DYNAMIC TEST SCHEDULES FOR SA-5 AND SA-6: MSC's announcement that an Apollo capsule will not be available for SA-5 led to a re-evaluation of dynamic test schedules for SA-5 and SA-6. The necessity to test four (4) configurations, that is first and second stage flights with Jupiter and Apollo tops on each, cuts into the time available for each test. If we rely chiefly on theoretical data with a limited number of experimental spot checks, it appears possible to maintain the present schedule, provided an increased risk is acceptable. Mr. Lindstrom and Mr. Cooper, of the Saturn Systems Office, pointed out that the hydro-static S-IV stage could probably be repaired and modified to be used for dynamic testing while SA-5D is at the Cape. This would improve the situation considerably and permit returning to the calculated risk level accepted in the old plan. Necessary actions are being taken by Saturn Systems Office.

B8/28

NOTES 8/27/62 GORMAN

1. LINDE COMPANY

On our notes for 8/20/62 Dr. von Braun ask the question "Why has the Linde Company bought land near Michoud rather than near MTF to build a plant for liquid oxygen, liquid nitrogen, and liquid hydrogen?" By far the largest cost in manufacturing and delivering these gases is the cost of electricity. The cost of electricity in the New Orleans area is 6 1/2 cents per kilowatt hour for first 10,000 KWH and 4 cents per KWH for all over 10,000 compared to 10 cents and 12 cents per KWH in Mississippi. The additional transportation costs are lost in the noise level of the savings in electrical costs. At least that is what the Linde people told me. ✓

2. STRIKE SITUATION

As far as we can determine we have a full contractor crew back at work. ✓

Jim

B 8/28

NOTES 8-27-62 GRAU

1. SYSTEMS CHECKOUT AND PREFLIGHT TESTING WORKING GROUP: Per your request for further clarification of NOTES 8-20-62 GRAU (Attachment 1) it is our understanding that calibration ports for pressure gauges were omitted from the S-IV stage due to weight considerations. A memorandum has been sent from the Checkout Working Group to the Instrumentation Working Group, Mr. Hoberg, with a copy to the Automation Board Chairman, Mr. Fichtner, requesting that serious consideration be given to designing in this capability for the S-II and S-IVB stages as it now exists on the S-I stage. ✓ Leak considerations seem particularly important with H_2-type stages! B

*2. SA-3 AND SA-4 CONTAMINATION: qam

a. During the pre-static checkout of SA-4 at the test stand, a liquid, which is thought to be oil or an oil additive, was found in a needle valve pressure cap of the pneumatic control system in which LN_2 is used as the operating media. Subsequent investigation disclosed that contamination originated in the ground source. The concensus of opinion of the participants of a meeting in Test Division was that the oil or oil additive was originating at the compressor station and was passing through the filter as a vapor and condensing downstream in the system. ✓

b. Due to the findings on SA-4, SA-3 is undergoing similar investigation. Generally, the same condition has been found on SA-3. ✓

c. The results of a chemical analysis by P&VE Division have not been received and therefore no decision has been reached. A significant delay to both vehicles could result.

B 8/28

NOTES - HAEUSSERMANN 8/27

1. ROCKET SLED TEST OF THE ST-124 INERTIAL PLATFORM FOR C-1: (Reference your comments to Item 2 in Notes of 7/23/62.)* You may remember that we performed sled tests for the ST-90 and the ST-120 on the Navy Track at China Lake. The tests on the ST-124 are being conducted on the Holloman Air Force Base Track which is considered to be the best in the country. The Air Force gave us a much cheaper price - $38,000 compared to approximately $240,000 at China Lake. The main objective of these tests is to expose the equipment to linear accelerations (also high vibrations automatically introduced from the rockets driving the sled). Levels of linear acceleration will range from 5 to 15 g's, with 10 to 14 g's of superimposed random vibrations at frequencies of 10 to 2,000 cps. The maximum rate of linear acceleration build-up will not exceed 50g per second. A comprehensive (MSFC provided) measuring and telemetering programs monitors sled and platform performance and operation during acceleration/deceleration profile to provide accelerometer performance verification. Three phase are planned:

Phase I - First test completed 8/21. Second test completed 8/24. These tests have established the gross vibration environment and acceleration/deceleration profiles. Auxiliary equipment and sled wiring were tested using dummy platform system.

Phase II - Tests scheduled to begin November 1962. Live ST-124 system will be tested to study proper system operation and for verifying data processing, reduction, and analysis.

Phase III - Tests are not yet scheduled. These will provide complete quantitative evaluation of the system.

The forebody of the sled (provided by Holloman) was flown from Holloman to MSFC and modified by Hayes Corporation to accept the ST-124 system. (Photographs are attached.)** We feel the sled test program will provide us with objective documentation from an outside agency on the performance of the ST-124 system under an acceleration and vibration environment.

2. STATUS OF IBM ACTIONS: The Guidance Signal Processor was signed off by NASA Headquarters 8/22. Negotiations have been completed and contract is now in effect.

Negotiations on the contracts for the local effort have been held with no problems being encountered. These should be effective by 9/1.

* Enclosure 1
** Enclosure 2 and 3

B 8/28

NOTES 8/27/62 Helmburg

1. S-1-4 ACCEPTANCE FIRING:

First firing is delayed because of contaminants found in Test Stand GN_2 pressurization system. Contaminants were determined to contain some LOX sensitive components which were traced to the additives used in the N_2 compressor oil. System is being cleaned and direct liquid to gas converters installed (eliminating lubricants, and compressors). First firing on S-1-4 now scheduled on or before September 6, 1962. ✓

2. CENTAUR TANK FATIGUE TEST:

The rupture in the tank was rewelded to permit the tankage to be pressurized. Pressurization was necessary before the tankage could be removed from the stand and transported. Tank was returned to GDA. ✓

3. DAC S-IV BATTLESHIP TEST PROGRAM:

Next firing scheduled for Tuesday, August 28, 1962. ✓

4. MTF:

Presentation of MTF FY63 COFF Funds was made to you Wednesday, August 22, 1962. The total FY63 funding request was indicated as $68,208,000. However, we have subsequently been requested by Mr. Newby to further reduce this amount by $3,708,000 to a revised total of $64,500,000. We are currently reviewing the MTF requirements to determine any schedule slippage due to additional reduction in funds as indicated above. Modification of S&P Contract to include S-II Test Facility partial design criteria is expected to be finalized August 31, 1962. Negotiations were completed August 21, 1962. ✓

5. WEST AREA (C-5) TEST STAND: (reference notes August 20, 1962 Helmburg)

Reprogramming of funds is still not approved in Washington. Delay has already caused more damage to construction schedule than the recent electricians strike. Pending approval of reprogramming action, no steps have been taken to prevent recurrence of excessive time delays, except to notify Mr. Newby and request corrective action.

1 Enc:
Attachment No. 1 Notes 8/20/62 Helmburg

Dave Newby
Shouldn't we make this an Immediate Action item? Brainerd will get hot under the collar when he hears this!!
(Let's send attached clipping along!) B

NOTES 8/20/62 Heimburg B 8/21

* 1. SA-4:
gam Preparations progressing satisfactorily. Static firing now planned 8/24/62. ✓

2. CENTAUR:
Centaur Tank Fatigue Test - Records show tankage failed after/or during second pressure cycle. All liquid hydrogen gone after 4th cycle. GD/A claims failure occurred at old patch previously welded. Test results from this test not worth a D---.

F-2 Static Firing - Static firing of the second flight stage has been delayed indefinitely pending P&VE team review of results of fatigue test conducted here and radiograph records of F-2 tankage. ✓

* 3. DAC S-IV BATTLESHIP TEST PROGRAM:
gam A 10-second (all engine) static firing was successfully performed on the S-IV battleship stage. Several prevalve and relief valves leaked and/or failed, but redundancy allowed test to proceed. Member of MSFC TERT team found instrumentation error and corrected same, which would have delayed test if undetected. ✓

4. MTF: 8/22
The results of the review of MTF FY 63 funding will be presented to you and Dr. Rees as early as can be scheduled. The negotiations for preliminary S-II test facility criteria with S&P has now been scheduled for Tuesday, 8/21/62. Proposals were received on Friday, 8/17/62, and two days are required for F&C review before negotiations. ✓

5. MARINE ACTIVITIES:
SA-3 will depart MSFC dock, 9/1/62. Due to vertical clearance restrictions at Florence, Ala., vessel will be required to pass under the new railroad lift span between midnight and 6 a.m. on 9/2/62, at which time pool elevations will be lowest and estimated time of arrival at Cape Canaveral, noon, 9/10/62. ✓

* 6. WEST AREA (C-5) TEST STAND:
gam Reprogramming of funds has not been approved in Washington. There will be a day-for-day slip in schedule until this action is complete, which is needed before Mobile can let a contract for the stand construction. Recommend that steps be taken to simplify and expedite facility funding, similar to system used by Corps of Engineers.

7. F-1 ENGINE STAND:
Bids taken the second time for first construction package still above government estimate, but due to critical schedule, contract award will be made, [illegible] ✓

K.H.,
What action has been taken?
B

Attachment [illegible] Heimburg

B 8/28

NOTES 8-27-62 HOELZER

No report.

NOTES 8-27-62 HUETER

B8/22

1. CENTAUR:

a. Centaur Evaluation: Preliminary copies of GD/A's response to MSFC evaluation of Centaur were received Aug. 23. The report has been sent to various MSFC divisions and will be discussed at a meeting at 9:00 AM on 9-5 with MSFC and GD/A personnel present. In the guidance area, GD/A has been directed to fly F-2 and F-3 with an open loop accelerometer made on the guidance system.

b. F-2 Status: The evaluation of F-2 tank is still incomplete. In addition to the investigation being conducted at GD/A, MSFC is also conducting a separate stress analysis of F-2 bulkhead including the plug weld area. As a result of the joint investigation, it was agreed that a full scale and flat sheet sample test should be done to further evaluate the problem.

c. Fabrication Hold: A hold has been placed on fabrication and welding at GD/A due to poor manufacturing techniques. Recommendation for a complete manufacturing program revision as well as modifications and improvements to fixtures and tooling was made to GD/A. GD/A is preparing a revised manufacturing plan to be released by August 27.

2. AGENA:

a. Mariner R-2: Mariner R-2, rescheduled for launching at 12:47 AM EST 8-27, was launched at 1:53 AM EST, 8-27-62. Preliminary data evaluation indicates lift-off and initial flight phases were near nominal; however, at approximately Beco minus 10 seconds, Atlas vernier engine No. 2 went hard over and stayed in this position until approximately Beco plus 50 seconds, at which time its operation again became normal. There are indications that, because of this malfunction, the vehicle attained a roll rate in excess of 8 degrees per second beginning at or near Beco and continuing until Beco plus 50 seconds. At this time, the vehicle apparently again became stable. Atlas control after this period through Beco appeared nominal. At this time, there is no explanation for the failure of the Atlas vernier engine. There are indications that Agena attitude subsequent to separation was very near nominal. All further Agena flight events appear near nominal. Based on preliminary information received from JPL, escape velocity has been attained and the spacecraft is operating normally. Preliminary evaluations indicate the possibility that all launch vehicle flight missions were attained. A JPL press release stated the present trajectory, without the midcourse maneuver, would allow the spacecraft to miss the planet Venus by some 600,000 mi. Information available here indicates 400,000 mi. miss distance is a more likely figure. JPL will complete a second trajectory calculation this morning and a more accurate report will be issued.

b. Agena Management Study: A MSFC group has completed their preliminary study and evaluation of the current NASA Agena program management. The study was initiated at the request of OSS for the purpose of determining areas where it is feasible and desirable for NASA to assume a more direct approach in managing the NASA program. The group has come up with a number of recommendations, some of which require the establishment of MSFC policy (how much effort can and should MSFC devote to Atlas, etc.). Accordingly, we would like to make a presentation of the study's findings to you at your earliest convenience.

c. Atlas Presentation: The Air Force (AFSSD) and GD/A will make a presentation on 8-28 to NASA personnel relative to the difficulties we have experienced with Atlas vehicles delivered to NASA and what actions are being taken to correct these deficiencies - Hueter, Duerr and Stone will attend from this office.

H.H. I'm greatly interested, but I suggest we wait with this presentation until this new thing we discussed at Times has crystallized and we know where we B go.

B 8/28

NOTES 8-27-63 Knelle

1. FY 1962 FUNDING

With respect to financial support of our vehicle and system studies the following picture emerges:

Advanced Launch Vehicles (Contact man: Norm Rafel)	1.8×10^6
Advanced Nuclear Vehicles and Systems, and Biotechnology (Contact man: M. Ames, OART)	2.5×10^6
Advanced Manned Missions and Systems (Contact man: Douglas Lord, OMSF)	1.6×10^6
Total	5.9×10^6

If we should get this support, we would be busy and happy. ✓

2. SPACE STATION

It is anticipated that MSC will forward their official preliminary project development plan concerning a manned space station to Headquarters this week and at the latest probably next week.

Ed Olling of MSC visited us last week and indicated that considerable support for this project is being generated in Houston and at Headquarters level. They now have about 12 people in the space station office and a 40 to 50 man team working full time on the space station. Olling indicated that he is sending an official request to Marshall, for a space station coordinator at this Center concerning SATURN launch vehicles and the total program. They are also in the process of establishing technical advisory committees as they have in the past. All Centers will be visited to establish coordination and planning. A special committee will also be formed to determine the types of research and development that must be conducted on the first space station. Olling was informed of your preference that the next approach be on a small scale of approximately 6 to 12 men and that the program should involve minimum funding at the outset. Olling is presently interested in getting Phase I approval only. This covers a $2 million study phase on the space station, APOLLO modification for six men, and a reusable logistics spacecraft. After that, they will worry about total program cost and space station configurations and more details of the total program, as the politics and engineering factors evolve. ✓

We will stay in touch with him and have a low level effort going within MSFC to study the problems of a small space station as you suggested, based on SATURN C-1B capabilities following the C-1B orbital rendezvous program. If this satisfies you, I think we can skip the meeting you offered on this subject and reschedule it a few months from now. ✓

H.H.K. I'm convinced that in view of NASA's overall funding situation this Space Station thing will not go into high gear in the next few years. Minimum C1B approach is the only thing we can afford at this time. B

B 8/28

NOTES 8-27-62 KUERS

1. Hydrostatic Test Tower: The approval of additional funds, required before contract award can be made on this project, continues to be held-up in Mr. Canright's Office. SSO states that this approval may be forthcoming on Monday, August 27. * Approved!

2. SA-D5: Clustering operations on SA-D5 began on August 23.

3. SA-T5: The complete test thrust structure was delivered to the Test Division on August 16.

4. Miscellaneous: ME has a contract with Drott Manufacturing Company to build two 50-ton capacity handling units. Scheduled for delivery in January 63, the two units, an "A" frame and a "C" frame, will lift and transport S-1C components and sub-assemblies. These lifts will be the largest lifts in existence on rubber tires. Michoud plans to use our designs for obtaining their handling units.

B 8/28

NOTES 8-27-62, Lange

1. C-1 - S-I-3 - discovery of contamination in LOX line may delay shipment from 9-1 to 9-8-62.

S-I-4 - due to contamination, the short duration firing is postponed from 8-23 to 9-6-62 and the long duration firing from 9-6- to 9-20.

SA-T-4,5 - all engines have been uprated to 188K. Test will begin upon completion of S-I-4 testing.

S-IV - Battleship - Hot firing of all six engines for 60 sec duration is scheduled for middle of this week.

Dynamics Vehicle - will be delivered to static tower 8-25-62.

All Systems Vehicle - scheduled for Environmental chamber 8-25-62.

S-IV-5 - completion in assembly tower scheduled 9-1-62.

2. C-5 - Boeing firm cost proposal, received 8021-62, is being evaluated in conjunction with Boeing's technical proposal received 8-17-62.

Boeing Make-Buy GFE Plan - comments and instruction were sent to CCR for transmission to Boeing.

F-1 engine - due to continued combustion instability, testing was suspended 8-19-62, until redesigned LOX dome can beiincorporated into test program. P&VE formed Ad Hoc group for further investigation.

S-IC - Retro-rockets will be mounted on stage. NAA agreed to transfer responsibility for mounting to Boeing.

Released! B

To avoid schedule slip, funds for MSFC Vertical-Assy-Hydrostat S-IC facility must be released immediately. Hqs suggestion to save funds by eliminating one of the two facility positions would again introduce a schedule slip.

S-II - Hq's accepted the estimated $300 Mill contract cost, but rejected proposed fee of $20 Mill. Fee should be based on $258 Mill total cost only. WOO is initiating negotiations on the fee. Letter contract is being extended through 9-30-62 at a cost of $6.750 Mill.

Waiver for 25 sec duration of all systems test was presented to AF Systems Command (Ackermann).

S-IVB - Agreement was reached with DAC that Corps of Engineers will supervise A&E design and construction of Complex Beta.

DAC preliminary proposal for C-1B application was received 8-14-62. Rough cost estimate is 189 Mill for eighteen flight stages, two additional flight stages and two inert stages for C-5, plus additional facilities to meet expanded and accelerated program. MSFC is currently evaluating proposal.

Guidance System - preliminary FY-64 Astrionics estimate is $47,429,970. This is a very tentative figure since Instrument Unit schedules are not firmed up yet

3. Mission - M-SAT is coordinating with FPO a study of carrying a Goodyear inflatable space station on an early C-1 R&D flight.

It appears that the AF is on a big "selling" campaign to get as many missions for Titan III as they can, since Maj. Hubbard of Titan III Proj. Office was trying to gather C-1 information for a comparison study. From discussions his main argument for Titan III use is its low cost and early availability.

O.K.

O.K.

Outcome? B

Brainerd Holmes is most anxious to get going with the CEB. He was quite concerned about "approval delays", said we'd expedite this as best as we can! B

B 8/28

NOTES, 8-27-62, MAUS

1. NASA MANAGEMENT CONFERENCE, OCT 4 and 5 - We are working with Major Clark of LOC to coordinate input to changes to 4-1-1 (headquarters directive on Planning and Implementation of NASA Projects) and your material for the NASA Management Conference at Langley. ✓

2. LIQUID HYDROGEN

Production - The Liquid Hydrogen Plant at West Palm Beach, Florida ceased operation again on August 22, due to a feedline leak. Operation expected to resume August 26; meantime 40,000 lbs are being shipped from West Coast. (Plant actually started late, Sat evening 8-25 — 65% capacity. Storage inventory good, no problems as of this date) ✓

Research Studies - Arrangements have been made between M-FIN, M-SAT, and M-RP to provide $2,000,000 for liquid hydrogen research studies. By agreement with M-SAT and M-RP, these funds will be provided to M-RP for management. ✓

3. COST ESTIMATION METHODS STUDY - As a result of an inquiry to the local Air Force liaison office, we have been invited to have a representative visit the AF Systems Command Headquarters to review data stored there, to discuss the current cost estimation study being performed in house at AFSC, and to arrange visits to other Air Force agencies involved in cost estimation studies. Woody Bethay will visit AFSC within the next two weeks. ✓

4. STUDY OF MSFC RESIDENT MANAGERS - We made presentation last week on Resident Project Management Study to Mr. Gorman, Mr. Hueter, Mr. Dannenberg, and representatives of M-QUAL, M-P&VE, M-P&C, M-ME, and others. Out tentative schedule is for presentation to MSFC Staff and Board meeting on September 14, 1962. ✓

B 8/28

1. BOEING: It has been agreed by all Staff elements of P&VE Division, that effective [illegible]-2, no requirement for in-house support from the Boeing Company will exist. The buildup of independent contractors will provide the support services required. Due to the fact that Boeing must hire new personnel, it is the considered opinion of the Division that complete utilization of independent support services should take place at the earliest possible date.

2. C-5: Dynamics Section and Computation Division personnel obtained vibration data of critical areas on an 18 x 10^6 pound crawler mounted stripper located at the Peabody Coal Co., Paradise, Kentucky. This data obtained will be used to predict environment for a proposed C-5 transportable launcher. (See Attachment No. 1, photographs, erecting of a shovel on a crawler.)

3. S-II DYE PENETRANT: At the recent S-II Materials Splinter Meeting, S&ID quality personnel proposed to use a dye penetrant to inspect welds in the LOX tank. This dye (Oil Red "O") was reported to be compatible with LOX. A sample of this dye was tested by the Engineering Materials Branch, this week, and found highly reactive with LOX. Violent detonations occurred upon impact, which contaminated the entire test instrument and test cell. Thus, this material is entirely unsatisfactory for use in connection with LOX and casts additional suspicion upon all types of penetrant materials for this application and on statements by S&ID.

4. CENTAUR: An intensive investigation of the CENTAUR F-2 structure at the forward bulkhead, by an MSFC Ad Hoc group, resulted in a recommendation not to use this structure in the current F-2 flight plan. The recommendation was based on the quality of plug weld repairs contained in this bulkhead, and the inability to make an accurate stress analysis of the area containing these plug welds. The plug weld radiographs showed indication of a crack, lack of fusion, and porosity. Since the design is based on a 1.0 safety factor, based on yield strength of the material, the quality of these welds is sufficiently poor to cause rejection of the item for flight use. It is noteworthy that the current F-3 structure also contains two plug weld repairs, the quality of which is inferior to the plug welds in the F-2 structure.

5. HIGH PRESSURE NITROGEN SYSTEM: The high pressure nitrogen system supplying the static test stand, cold calibration test stand, and the power plant test stand has become contaminated with additives (anti-oxidants, anti-foaming agents, and extreme pressure agents) from the compressor oil. Deposits of these additives are highly incompatible with LOX (insensitivity level - less than 1 Kg-m). The contamination has been transferred, as determined by chemical analyses, to SA-3 and SA-4. We have a cleaning problem on our hands. SA-3 will be delayed for one week.

6. DYNASOAR STUDIES: As per your request some work was spent to investigate the compatibility of the DYNASOAR with the C-1B. Attachment No. 2 includes artist's concepts of the configuration. Work is continuing at a low level of effort. I would propose that the S-I Stage manufacturer innocently inject this configuration into the press based on his interest to sell more S-I stages. (Also S-IVB stages)

7. SYSTEM INTEGRATION OFFICE: Attachment No. 3 is a draft which was agreed upon by Dr. Rees. Discussions were held with Dr. Hausserman and his desires were incorporated.

Attachment #1: Erecting Shovel on Crawler
Attachment #2: Artist's Concepts
Attachment #3: Draft

NOTES 8-27-62 Rudolph B 8/28

1. Long Delays Between Working Group Decisions and Contractor Action:

O. Lange Please look into this and implement if feasible Keep Rudolph and me posted B

My representative who attended the Electrical Design Integration Working Group Meeting on August 14, 1962 pointed out that Mr. Aden from the Astrionics Division complained of long delays - up to six months - occurring because these technical decisions have to be negotiated into the contract.

In order to eliminate these negotiations, I suggest to establish a "Modification" item in the contract, against which the technical people can write "Technical Direction Orders" to the contractor for execution without delay.

2. OMSF and OSS Management Council Meetings:

I would like to suggest again that meetings between the OMSF and OSS Councils be held to better align the efforts and so assure maximum support from the unmanned program. Just had one. Very successful B

To my mind it does not seem necessary to have all members from each council participating.

JCM

NOTES 8-27-62 WEIDNER B 8/28

1. F-1 ENGINE TESTING: All F-1 engine testing was discontinued this past week due to engine serial number 003 experiencing rough combustion after 13.5 seconds mainstage operation. Rocketdyne has discovered a 350 cps pressure oscillation in the propellant system which has been present in the past but low in magnitude. Rocketdyne feels this frequency is connected to the stability problem. A modification to the LOX dome volume is being considered in an effort to alleviate the instability problem.

2. J-2 PROGRAM: Rocketdyne has conducted four gas generator tests in the Component Test Lab to simulate engine system conditions that led to the recent gas generator explosion.

Results of these four tests were no leakage from gas generator LOX valve and no gas generator ignition "pops".

One engine system test was conducted after the four gas generator tests with no ignition "pop". However, rough combustion cutoff occurred at main chamber ignition due to low temperature fuel. This will be remedied on the next test by decreasing engine chill-down time.

3. RL10 PROGRAM: An RL10A-3 engine has been subjected to fuel and oxidizer depletion tests on the P&WAE-7 Vertical Test Stand. The Test Stand automatic abort system was deactivated for a portion of these tests and the Douglas Aircraft Company "engine out" sensors was satisfactory and the engine suffered no detrimental effects.